December 1961

- What metallic clothing can do
- How nonwovens are made
- New at Manchester
- Dyeing synthetics up-to-date

Complete contents on page 4

Textile Industries

a W. R. C. Smith publication formerly "Cotton" fifty cents per copy

University Microfilms
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Here is SPECTOMATIC– the ultimate solution to yarn clearing

The Master Control Unit maintains up to 120 Spectomatic units which can be divided into four sensitivity groups. These can be visually checked at any time through the locked plexiglass cover.

Piecenups definitely removed

Double thread definitely removed

Slubs definitely removed

Lint (eyebrows) removed according to sensitivity of Spectomatic

Trash that should not be removed

An entirely new measuring principle—designed to meet your most exacting yarn clearing requirements — is incorporated into the new, fully transistorized Uster Spectomatic. Units can be precisely controlled to distinguish between faults which *you want removed*, and those which *can be left in* the yarn. In other words, Spectomatic will not cut where there would be no advantage in replacing the fault with a knot. Consequently, you can expect and will receive optimum yarn clearing.

Spectomatic's electronic measuring device does not come into contact with the yarn so there is no danger of chafing. *And*, by being *fully transistorized*, Spectomatic is virtually service-free and has practically an unlimited life expectancy.

Spectomatic removes *approximately 65% more slubs* than existing mechanical slub catchers and because units are not affected by vibration, they may be mounted directly on the winder. Spectomatic operates on very low voltage and is not affected by power fluctuations. It requires no warm-up period.

Adjustments for yarn count change at the winder are fast with Spectomatic. The sensitivity of an entire frame can be changed in just three seconds by resetting the Master Control Unit instead of adjusting each individual unit. Critical sensitivity remains constant day to day and the possibility of unit to unit variation is extremely remote.

Send for more information on Spectomatic — truly today's ultimate solution to yarn clearing.

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EVENNESS TESTER • INTEGRATOR • SPECTROGRAPH • IMPERFECTION INDICATOR
VARIMETER • STRENGTH TESTER • SPECTOMATIC • WARP PREPARATION EQUIPMENT

USTER CORPORATION, CHARLOTTE 8, NORTH CAROLINA

Canadian Sales Office: Hugh Williams & Company, 77 York Street, Toronto 1, Ontario

CONTINUOUS QUALITY CONTROL IS ABSOLUTELY ESSENTIAL FOR EFFECTIVE MACHINERY MANAGEMENT. A FULLY EQUIPPED USTER EVENNESS CONTROL SYSTEM IS LITERALLY THE NERVE CENTER OF AUTOMATION.

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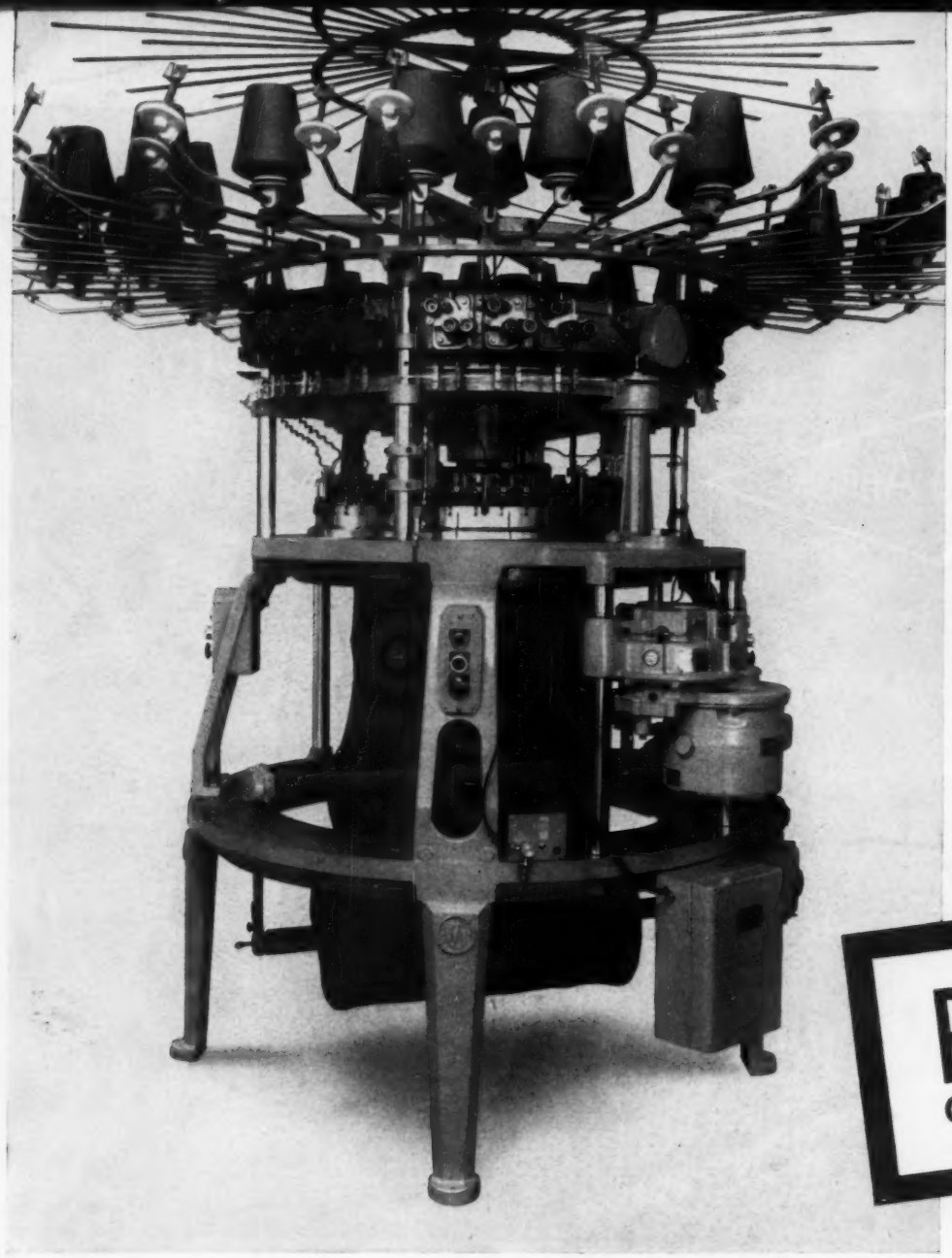


PBP-44
CHALLENGER

PRESENTING THE "CHALLENGER"

Added to Wildman Jacquard's fine family of knitting machines is the all new 30" diameter, 44 feed **"Challenger".**

The **"Challenger"** is a high production yard goods circular knitting machine for the production of double pique fabrics. Its rugged, modern styled frame, together with a new heavy dial support stem, provides the rigidity so necessary for the high production of quality fabrics.

Rearrangement of the needles or dial sections (which are made interchangeable) enables the following fabrics to be produced: double pique, Swiss or French knit . . . sihgle pique . . . eightlock . . . full rib . . . multicolor checks or block plaids . . . the various tuck effects . . . double jersey . . . French welt fabrics and stripes.

WILDMAN JACQUARD

WILDMAN JACQUARD CO. • 1210 STANBRIDGE ST. • NORRISTOWN, PENNA. • MANUFACTURERS OF HEMPHILL BANNER KNITTING MACHINES

A Subsidiary of Draper Corporation, Hopedale, Mass.

Manufacturers of the only circular knitting machines using a true Jacquard patterning mechanism

UNMATCHED VERSATILITY

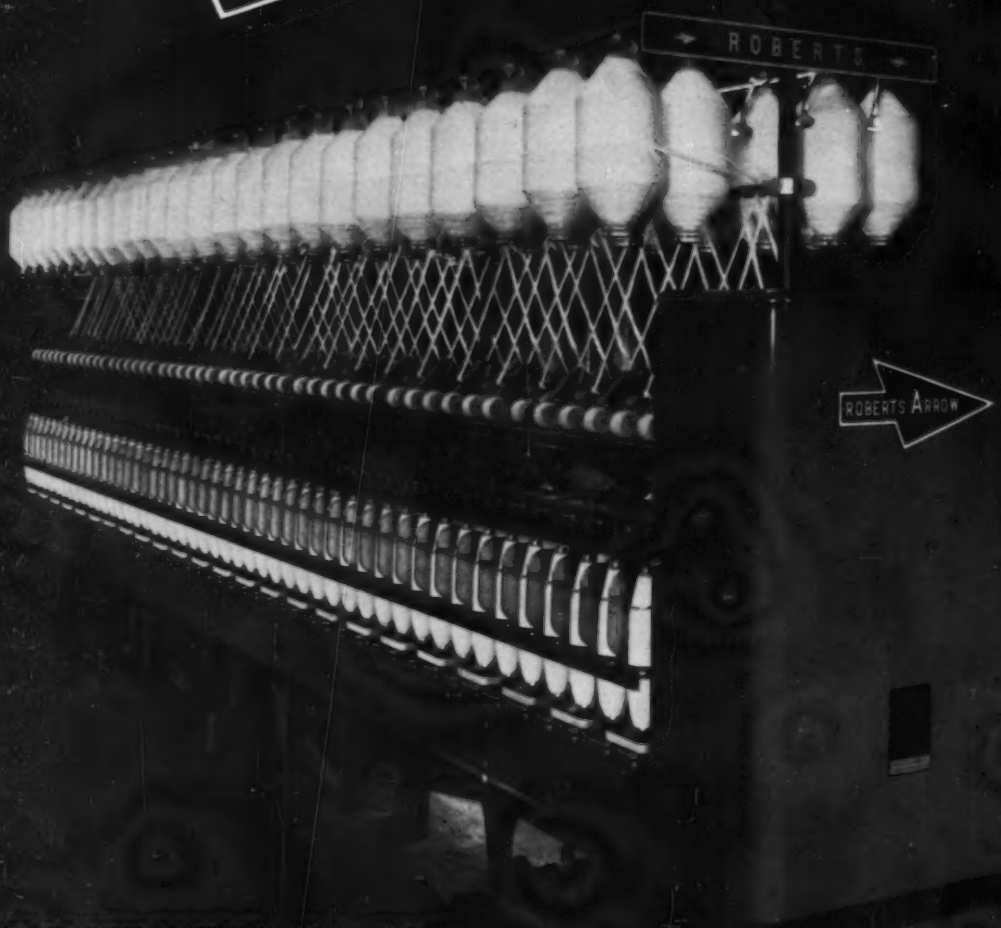
ATTRACTIVE LOW PRICE

INCREASED SPEEDS

BEST YARN QUALITY

RUGGED SIMPLICITY

ROBERTS ARROW



ROBERTS ARROW SPINNING for cotton, synthetic or worsted systems is available in all ball-bearing, rugged long-life frames of 25-inch or 36-inch width. More than 1,500 Arrow Frames are in mill operation.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

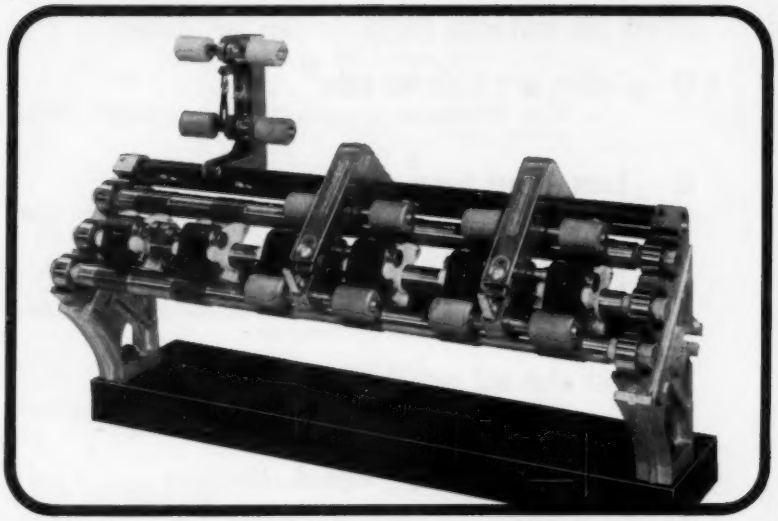
For further information use Handy Return Card, Page 175

YARN MAKING MACHINERY

ROBERTS NEWS

COTTON, WORSTED OR LONG FIBER SYSTEMS

Roberts FC Drafting System . . . Cleanest, Simplest, Best Yarn Quality



FC Drafting clears roll beam of all weighting attachments. Ball bearing bottom rolls on all three lines, shown above, are optional.

- Cleanest Running — Easiest to Clean
- Simplest — Fewest Number of Parts
- Highest Yarn Quality — Stronger, More Even Yarns
- Broadest Versatility — Cotton, Synthetics, Blends
- Short or Long Staple — Synthetics 1⅜" to 3"
- Coarse or Fine Yarns — 2s to 120s
- High Draft — 10 through 60
- Cartridge Weighting
- Roll Beam Clean — No Weighting Attachments
- No Lever Screws, Weight Levers and Hooks, Dead Weights
- PosiWate Pendular Arm Suspension — Positive Weighting
- No Oil in Entire Drafting Zone
- 3 Lines Ball Bearing Top Rolls
- Ball Bearing Bottom Rolls Optional
- Hardened Bottom Rolls with EvenGrip Fluting
- Nylon Cradles with Choice of Pin Opening
- Reduces Weight on Frame by ¾ of a Ton

ROBERTS COMPANY **Sanford, North Carolina**

Arrow Spinning Frames for Cotton and Worsted Systems • Twisters and Roving Frames Tow-Transformers • ParaBlenders • ParaDrafters • AutoEveners

Roberts Company has achieved a most precision made cotton spinning system with its FC Drafting. It is the cleanest running, and the simplest with the fewest number of parts. It consistently gives the highest yarn quality from spindle to spindle and from year to year.

Dramatically new and improved in FC Drafting is a cartridge weighting arrangement which eliminates all weighting attachments to the roll beam, disposing of the lever screw, weight lever, weight hook and dead weight.

Used instead is an enclosed spring cartridge attached to a cartridge bar fastened between roll stands. A simple lever is depressed to unweight or to weight up the top rolls. There are no short springs inside the pendular suspension.

WIDE VERSATILITY

Coarse or fine yarns from 2s to 120s, cotton or synthetics and blends, and a broad range of drafts from 10 to 60, are efficiently handled by new FC Drafting.

Proper, efficient fiber control, fiber gripping and weight is provided without the limitations of other systems using short springs, weights or magnets.

FC Drafting can be arranged to handle short or long staple cotton, and synthetic fibers from 1⅜" to 3" long. A choice of cradle lengths and solid or recessed apron top rolls provides this flexibility.

One arrangement handles cotton up to 1⅜" long and synthetic fibers 1⅜". Recessed top apron rolls may be used for synthetics of 2" to 2½" long. Another arrangement handles regular running of long staple cotton up to 1⅜", or synthetics of 2" and less. The recessed roll extends this to 3" synthetics.

Send for Bulletin. **For further information on Roberts FC Drafting write for Technical Bulletin FC-101.**

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Textile Industries

The Textile Management

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E. T. Barwick Mills now make blankets by the tufting process. This is the way they do it.

60 Loom cleaner boosts quality
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Part 2—What they are and how they're made.

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One of several important topics that came up as Georgia mill men met recently to discuss slashing.

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THIS MONTH'S COVER

Delores Hickles is mending a tufted blanket as it comes off the machine at E. T. Barwick Mills' Knoxville, Tenn., plant. For details of the development that's the talk of the tufted-textile industry, see the article on page 57.

IN TI NEXT MONTH

Progress in research

■ AN ANNUAL FEATURE of the January issue of TEXTILE INDUSTRIES is J. B. Goldberg's review of the textile research achievements of the previous year. Next month we'll present his review for 1961.

The first part will describe foreign and domestic progress in fibers and yarns, and manufacturing methods and equipment. The second part will cover wet processing, textile instruments, and test methods.

Keeping the union out

■ IF YOU DON'T want a union, check the January issue of TI for some tips on how not to get one.

Two management consultants in the labor relations field draw from their experience to discuss the factors that make workers vote for the union. And they draw some conclusions about what you should do—and what you should not do—before the union organizer is at the front door of the mill.

And . . .

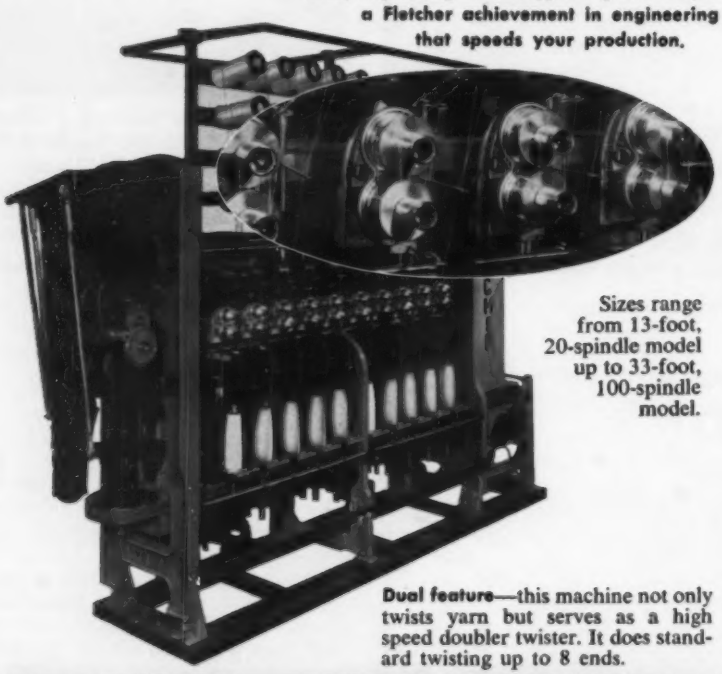
■ IF YOU'VE ever been plagued with oil-contaminated cotton, you'll be interested in the details of a quick test for identifying such cotton. And the article gives some suggestions on how to deal with it once you've found it.

And for the wet processing man, there's a TI staff report analyzing what was discussed at the recent Chemical Finishing Conference.

NEW from FLETCHER

HIGHEST SPEED NOVELTY YARN TWISTER EVER MADE

This Novelty Yarn Twister, which operates at a speed of 5,000 to 9,000 RPM, depending on the type of yarn used, is a Fletcher achievement in engineering that speeds your production.



Sizes range from 13-foot, 20-spindle model up to 33-foot, 100-spindle model.

Dual feature—this machine not only twists yarn but serves as a high speed doubler twister. It does standard twisting up to 8 ends.

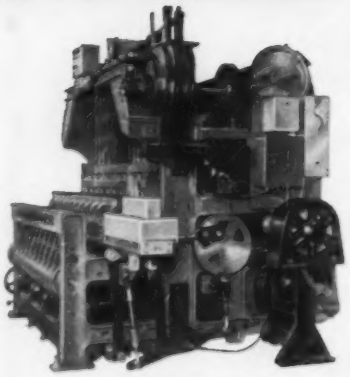
TRY BEFORE YOU BUY with 3-month trial rental plan

Get proof before you pay by evaluating these machines in your own plant. They are available for delivery, completely assembled. See them in operation in the Fletcher Industries Showrooms in Cheltenham, (Philadelphia) Pa.

NYLON AUTOMOBILE SEAT BELT LOOM

This loom is made specifically to meet the fast-growing demand and to overcome the shortage of equipment for the manufacture of automobile seat belts.

Fully equipped and erected $5,000



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С РОЖДЕСТВОМ
恭賀聖誕
God Jul
Felez Natal
ΚΑΛΑ ΧΡΙΣΤΟΥΓΕΝΑ
Mele Kalikimaka

Any way you say it, it's "Merry Christmas," and that's what the whole staff of TEXTILE INDUSTRIES wishes to all of you.

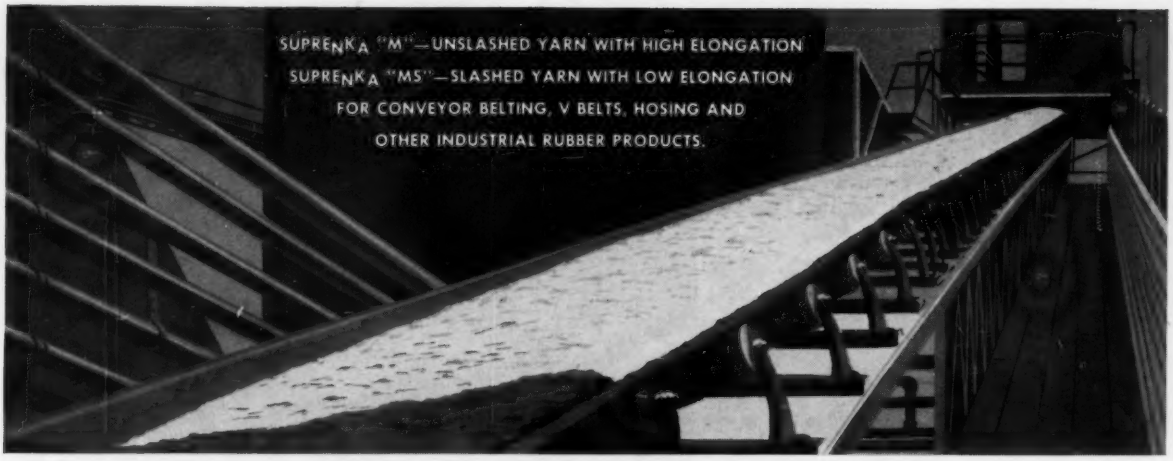
Christmas Gift Suggestions

Once more TI offers its free suggestion service for those of you who are late in taking care of Christmas gifts. This time we're thinking of good old Rover, or as Neiman-Marcus of Dallas puts it, "This is N-M's suggestion to tuck under the tree for the dog who has everything."

Their suggestion is a 14-karat yellow gold dog bone to hang on his collar It's one inch long and sells for $30. Or if your Rover is an outsize beast, you can get one an inch and a half long for $45.

Or have you, like most of us, found yourself in the position of sending gifts to those in exceedingly high positions—kings, shahs, maharajahs, prime ministers, and such—and wanting to keep your transactions completely secret and confidential? Well, N-M has a solution to that problem, too: One of three senior officers of the firm will handle your order, if you wish, and no written bill will be sent; you'll be billed by

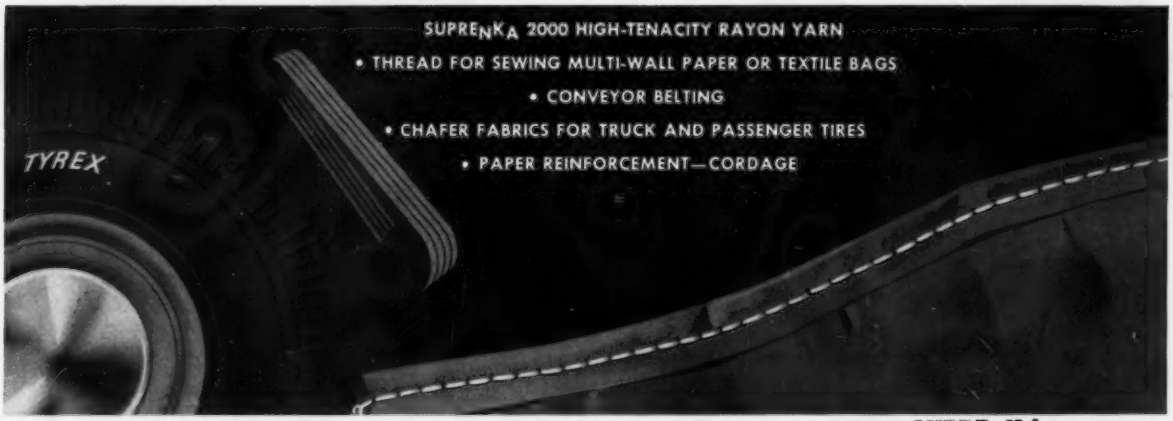
For further information use Handy Return Card, Page 175


SUPRENKA "M"—UNSLASHED YARN WITH HIGH ELONGATION
SUPRENKA "MS"—SLASHED YARN WITH LOW ELONGATION
FOR CONVEYOR BELTING, V BELTS, HOSING AND
OTHER INDUSTRIAL RUBBER PRODUCTS.

New symbol of yarn power for industry...

SUPRENKA®

No job is too tough for Suprenka, Enka's high-tenacity, low-cost industrial rayon yarns—yarns made stronger to last longer. Name the job, and you'll find a superior Suprenka yarn engineered to handle it smoothly, efficiently, economically.


SUPRENKA 2000 HIGH-TENACITY RAYON YARN
• THREAD FOR SEWING MULTI-WALL PAPER OR TEXTILE BAGS
• CONVEYOR BELTING
• CHAFER FABRICS FOR TRUCK AND PASSENGER TIRES
• PAPER REINFORCEMENT—CORDAGE
TYREX

New! American Enka Launches High Modulus Industrial Yarn Called SUPRENKA® Hi Mod™

This new high-tenacity rayon yarn has been engineered for end-uses where high modulus, negligible wet or thermal shrinkage, and high strength are required.

Suprenka Hi Mod provides excellent stability during processing because of its low shrinkage when heated or moistened, and in use the new yarn has low growth under load.

Contact Industrial Sales Dept., American Enka Corporation, Enka, N. C. MOhawk 7-1311 or 350 Fifth Avenue, New York 1, N. Y. PE 6-2300 or the District Sales Office nearest you.

American ENKA Corporation, Enka, N. C. • Producer of nylon • rayon • yarns • fibers

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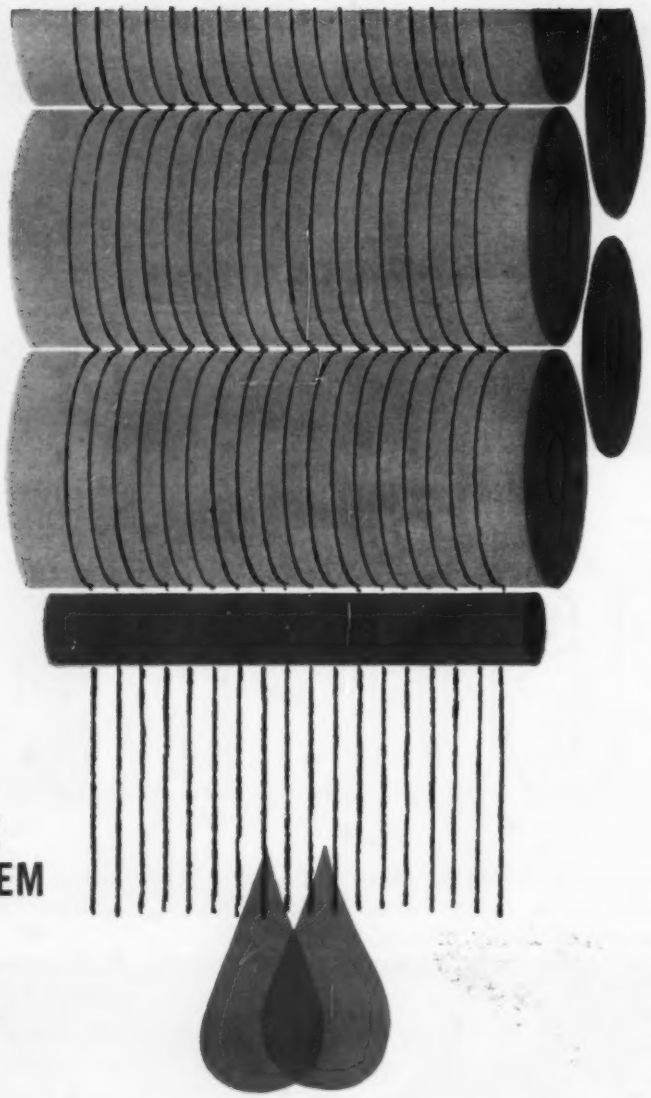

NEW MOISTURE CONTROL SYSTEM GIVES EXTRA-FAST RESPONSE FOR HIGH-SPEED SLASHERS

The new Honeywell *Moist-O-Graph IV* Control System delivers the extra-fast response needed to effectively measure and control regain of yarn on today's high-speed slashers.

Heart of the system's fast response is the new DPP (*Deviation Proportional Pulse*) Control Unit. By employing a new correcting technique, the DPP unit overcomes the production problems usually encountered with high-speed slashers equipped with conventional moisture control units.

In conventional systems, when the moisture deviates from the desired value, the control unit sends a correcting pulse of a fixed duration to the motor controlling the speed of the slasher. If, after a preset interval, the moisture content has not returned to this desired value, another correcting pulse—still of a fixed duration—is sent. This is repeated until the desired regain is re-established. On high-speed slashers this means that a lot of yarn races through the machine before the control unit can effect the proper regain.

With the DPP unit in the *Moist-O-Graph IV* system, correcting pulse signals to the motor are of a *duration directly proportional to the magnitude of the deviation* from the desired moisture content. The control unit quickly adjusts the slasher speed before any appreciable amount of yarn goes by. The desired per cent regain is held for practically the entire run.

For specific details on how the new *Moist-O-Graph IV* Control System can improve *your* high-speed slasher operation, contact your nearby Honeywell textile field engineer. He'll be glad to examine your production requirements, make detailed recommendations, and provide supervision for the complete control installation to ensure optimum performance. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Aves., Phila. 44, Pa. In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

Honeywell

H First in Control SINCE 1906

HONEYWELL INTERNATIONAL Sales and Service offices in principal cities of the world. Manufacturing in United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

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IMMUNOL eliminates the fire hazard

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IMMUNOL is very economical*

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IMMUNOL is non-toxic, odorless

It won't cost you anything to try IMMUNOL . . . the solvent that's widely used in textile mills throughout the country. Send for free sample today.

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*1 part IMMUNOL to 20 parts water is sufficient for all cleaning operations. It costs less than 13¢ a gallon!

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Service Representatives in Principal Cities

SOUTHERN STATES ALLEY-SKAT* SLIVER HANDLING SYSTEM SPEEDS DOFFING AND CONVEYING BIG CANS

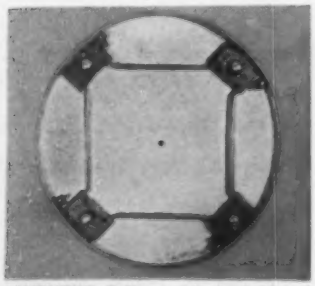
As mills convert to large diameter coilers—with cans weighing up to 12 times more than those of only a few years ago—doffing and moving heavier cans presents a problem. Yet it can be solved simply and economically with Southern States' exclusive ALLEY-SKAT system.

This unique system consists of a can dolly easily affixed to the bottom of any size can, a specially designed cantable, and latches to permit train-like movements of several cans by one man. The ALLEY-SKAT system can be used on cans 16 through 30 inches.

On new coilers, Southern States supplies the ALLEY-SKAT cantable at no additional cost. The only extra cost is for the ALLEY-SKAT dolly and latches for the system.

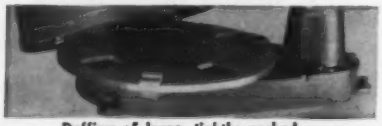
Get full information on this unique handling system from your Southern States representative or write for Bulletin 502.

Patents 2,816,328; 2,823,924; 2,908,945; 2,916,780; 2,920,902; 2,936,496; 2,950,021. Others pending.



ALLEY-SKAT Dolly mounts to inside of can rim. Dollies are made of finest materials. Heavy-duty unit shown is for 24" and 30" cans.

Cantable adapter plate is available as standard equipment on Southern States Coilers at no extra charge.



Doffing of large, tightly packed cans is quickly and easily accomplished. No lifting required.

*TRADEMARK

SOUTHERN STATES

HAMPTON, GEORGIA

SHORTS & REMNANTS

(from page 6)

phone. And it only costs 1% extra.

Then again, maybe you'd like to solve the gift problem and help to reduce textile inventories at the same time. If so, the National Cotton Council's suggestion is for you:

We'll go along with that, except that we'd amend it to read, "Give Textile Gifts for Christmas."

Merry Christmas to TI

"I can't let this opportunity pass without telling you what a splendid job you are doing with TEXTILE INDUSTRIES. In my opinion, it is by far the finest in the field."

WILLIAM D. ELLIS
President
Southern Mills, Inc.
Atlanta, Ga.

► We just read somewhere that Hawaii, our 50th state, is now eligible for Federal money under the Interstate Highway Program. Bridge or tunnel?

Textile Author

We've mentioned several textile men recently who spin some pretty good yarns—on paper as well as in the mill. Another is **Karl T. Marx**, vice-president of Robert Reiner, Inc., whom many of you may know as a writer on technical and marketing matters. However, he also has an avocation, that of a writer of short stories, aphorisms, and radio plays, with a television play in the works.

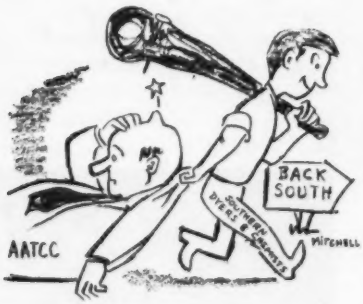
If you'd like to read one of his short stories, get hold of a copy of

this month's *American Mercury*. In it you will find "The Lost Song," a true story about one of Christendom's most famous songs, which had been lost for many years.

South Rises Again

You may recall our mentioning last month that AATCC rescinded its decision to move headquarters from Lowell, Mass., to New York City. A while ago (in September, to be exact), our ineffable advertising manager, **Walter Mitchell**, gave his version of the original decision:

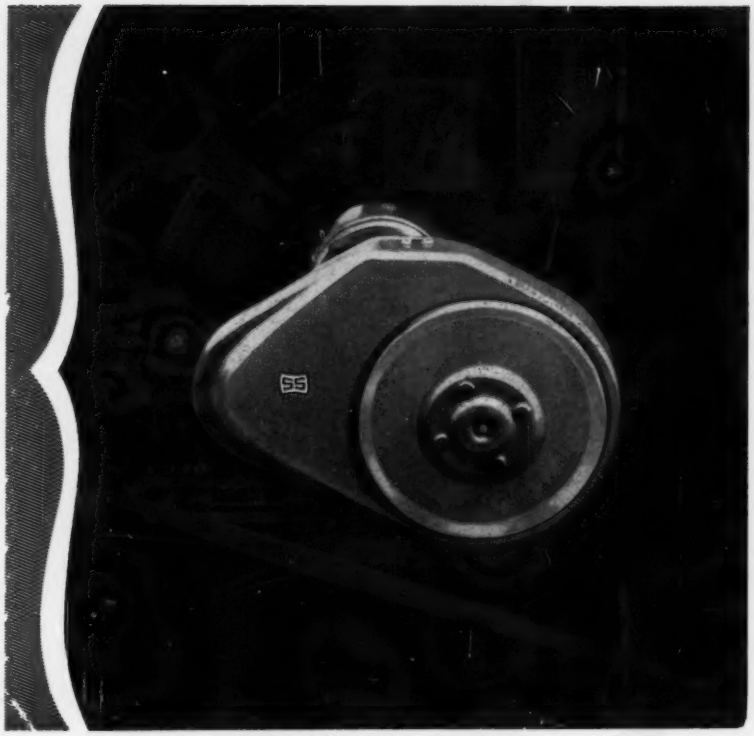
Now he's back with the follow-up:



► To test a new nylon carpeting material, a salesman for E'Con Carpet Mills is walking from New York to Houston in shoes soled with the product. Or at least he started to walk from New York to Houston. And our atlas tells us that he had a 1,675-mile hike ahead of him. At the time we were talking with our informant, he didn't know if this adventurous carpet peddler actually made the grade, or if he gave the whole thing up somewhere in the vicinity of Allentown, Pa., and decided to have his floors covered with shoe leather.

► A recent news release from the University of Wyoming had the headline "Ass't Ag Secretary Calls for Lamb, Wool Industry to Organize." We submit for their slogan, "Lambs of the world! Unite! Don't let them pull the wool over your eyes!"

Continued on page 14



SOUTHERN STATES CD-2 CARD DRIVE COMBINES INTO ONE UNIT ALL OF THE FEATURES WANTED FOR COTTON CARDS

Here is why we honestly believe the Southern States CD-2 Card Drive is the safest, simplest, most efficient individual drive on the market today:

Finger-tip control. No changes in operating procedure. Unit is controlled by simple clutch lever in both starting and hand stripping.

Full speed in seconds. A 1½ hp high torque card motor brings card into full operation, seconds after clutch is engaged.

Safety engineered. All belts and moving parts are covered. Starting and idling is accomplished by simple clutch lever.

Rugged construction. The entire unit is built for heavy-duty service: steel main stand; cast iron jackshaft bracket and main pulley; cast aluminum cover. Ball bearing throughout.

Easy installation. Fits any cotton card. Minimum number of holes to drill in frame. Drive pulley, collar and clutch are preassembled and slip on to shaft using existing keyway.

Get the facts from your Southern States representative or write for Bulletin 301-a.

55 SOUTHERN STATES

HAMPTON, GEORGIA

ADVERTISEMENT

Dependability is built into Draper looms . . . part by part. Regardless of size, shape or location, each part is engineered and manufactured to precise tolerances. The Harness Cam Assembly illustrated above, is one reason why Draper has become the accepted name for quality and dependability throughout the textile industry.

DRAPER CORPORATION

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.

RETARDING LOOM OBSOLESCENCE

A steady flow of new Improved Repair Parts keeps mill weaving machinery up-to-date

Draper Corporation is continually improving parts and mechanisms for its looms. Year after year, scarcely a week passes without the introduction of another Improved Repair Part for one or more Draper loom models. These are all designed by Draper research and engineering staffs to keep present mill machinery competitive with our newest looms.

Each Draper Improved Repair Part is made for application to as many mill loom conditions as possible. Although they may be copied by others, the original design of these parts can be successfully accomplished only by the loom builder, for he alone has complete information on the various loom constructions in the field.

These Improved Repair Parts help to keep older looms operating profitably. They postpone the day when a mill must consider its looms to be obsolete.

What is an Improved Repair Part? An Improved Repair Part is one so developed by Draper engineers that is can be applied, as far as possible, to all existing Draper looms in the mills. It is designed to give one or more of the following benefits:

1. Better service throughout a longer life than the original loom part.
2. Easier installation with less down time.
3. Better loom operation.
4. Production of higher quality fabrics.

How Improved Repair Parts are developed. Ideas for Improved Repair Parts originate from Draper engineering and manufacturing de-

partments, Construction Committee members, Draper sales and service men, recommendations of material suppliers and, frequently, from suggestions by mill superintendents, overseers, and loom fixers.

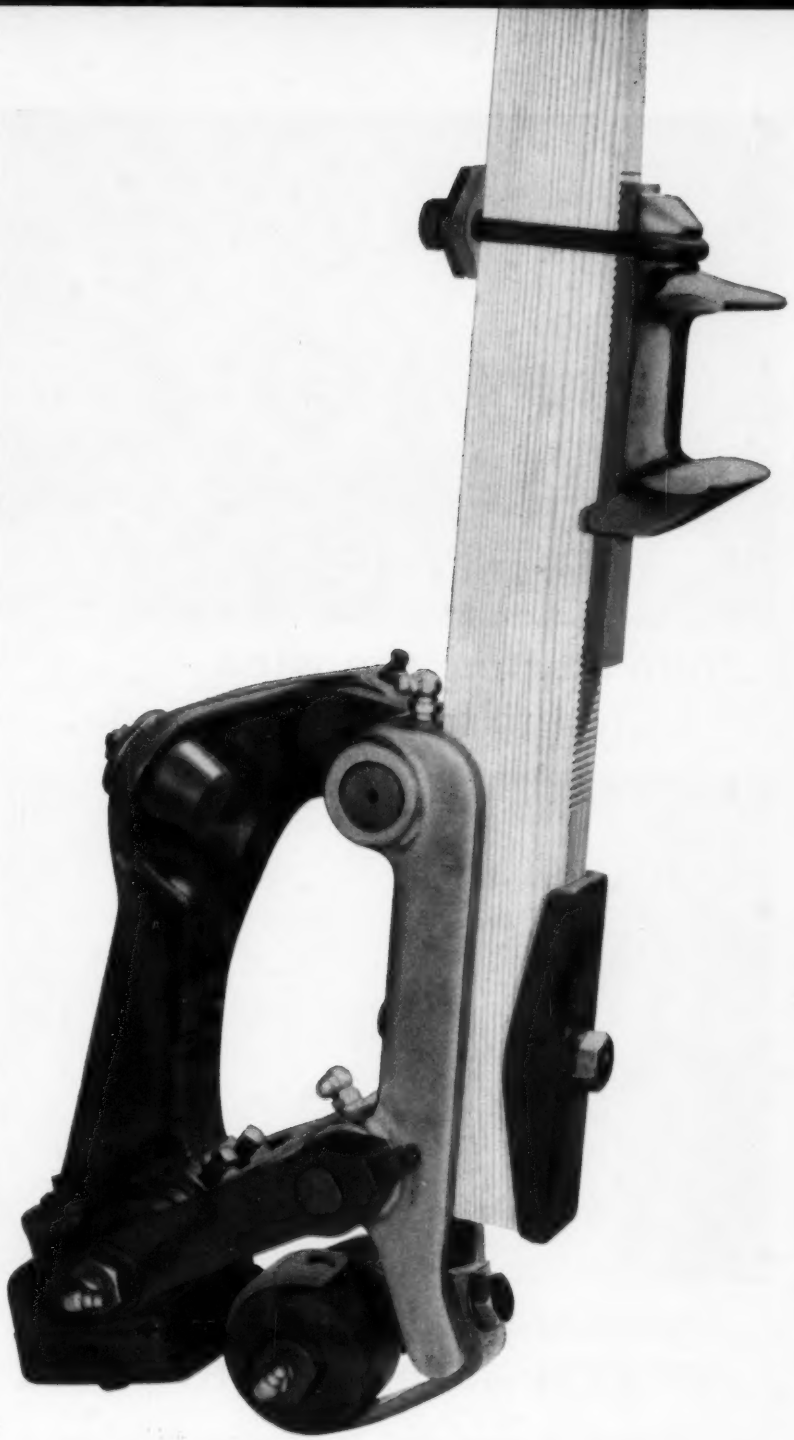
Usually extensive "mill trials" are conducted, whereby a new part proves itself in actual weaveroom operation, before it is offered for sale.

Although Improved Repair Parts are designed to replace older parts, mills often use both old parts and new Improved Repair Parts simply because supply room bins and records are set up for ordering both. Generally the older number could be eliminated to advantage.

Why Draper Parts are best for Draper looms. Uniformity of parts is necessary for successful standardization in setting loom mechanisms to gauge. Worn or poorly fitting parts just cannot be set to gauge. Competitive mills know that only with the best loom parts available can they get uniform and accurate settings, that *only with gauged settings can they get maximum production, lowest weaving costs and highest cloth quality.* These mills are first putting their looms in top condition and then running them with correct and standardized settings.

In such a planned program, differences in initial cost of repair parts are often found to be of least importance. More and more mills are using Draper parts *exclusively* to maintain their weaving machinery at highest competitive standards. Draper parts are made from the same metal mixes as original parts furnished with the loom. They are finished to master overall gauge dimensions available only to the loom manufacturer. Draper Improved Repair Parts fit Draper looms and each other better; as a result, they are dependable and last longer. Correct engineering design, selection of proper materials and use of economical manufacturing methods are determined for each Draper part by a competent knowledge of their effect upon *total loom operation.*

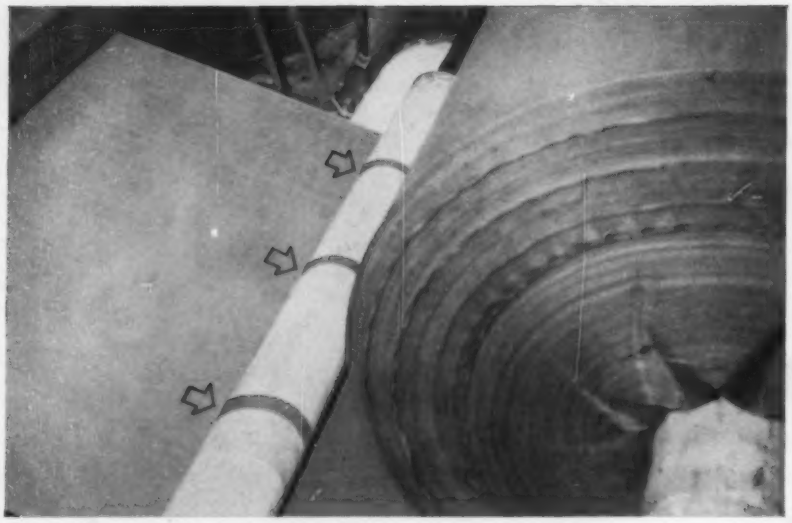
You can find out more about Improved Repair Parts from your Draper Improved Repair Parts Catalog, from Draper sales and service representatives, or by writing to Draper Corporation.



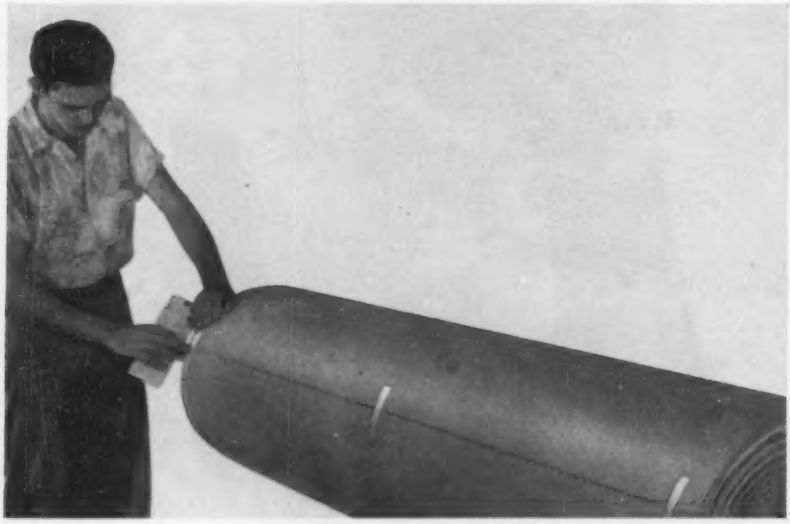
Draper Link Type Parallel . . . provides a positive fully constrained action, contributing to smoother shuttle flight, improved boxing, simplified adjustment and longer life of Shuttle Box and Pick Motion parts.

DRAPER CORPORATION

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.



from starting the wind
to tabbing roll ends...



finished goods are held with
TEXTILE TAPES FROM 3M

A few bands of stick-at-a-touch "Scotch" Brand Textile Tape on winder shells make high-speed winding a cinch in finishing plants. Cloth is picked up instantly by tape's adhesive . . . one application can be used several times before replacement. And, at the end of each wind, use two or three short strips of "Scotch" Brand Textile Tape to hold the last lap securely. For more information, contact your 3M Representative or nearest "Scotch" Brand Tape Distributor . . . or write: 3M Co., 900 Bush Avenue, St. Paul 6, Minnesota, Dept. IBO-121.

SCOTCH BRAND

Minnesota Mining and Manufacturing Company
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

"SCOTCH" IS A REGISTERED TRADEMARK OF 3M CO., ST. PAUL 6, MINN.

SHORTS & REMNANTS

(from page 11)

Recording for 50 Years

At left in the picture below, in front of the primly attired business girl of 1911, are some of the early Servis travel-time and machine-production-time recorders (including a hand-made wooden model, far left) manufactured since The Service Recorder Co. was founded in Cleveland 50 years ago. Some of these recorders are still in daily use.

In front of the modern miss are some of the company's current line of recorders. For a look at how a textile finishing plant is using some of these recorders, see page 109.

Reprint Requests

Some of those who recently requested reprints from TI, selected at random: **J. D. Siewers,** v-p, Washington Mills Co., Winston-Salem, N. C.; **Luther D. Smith,** supt, Revolution Div., Cone Mills Corp., Greensboro, N. C.; **E. A. Ross,** Southern Weaving Co., Greenville, S. C.; **C. A. Townes,** PA, The Jefferson Mills, Inc., Jefferson, Ga.; **F. J. Young, Jr.,** mgr, Bemis Cotton Mill, Bemis, Tenn.; **George D. Ruby,** sec, Jantzen, Inc., Portland, Ore.; **Earle J. Wentz, Jr.,** v-p and gen mgr, Roanoke Mills, Inc., Roanoke, Va.; and **Fred D. Hill,** tech supt, Johnston Mill, Johnston, S. C.

PERSONAL NOTES

James Harrell has been named officer in charge of the 23 plants in the cotton division of J. P. Stevens & Co., Inc. Mr. Harrell is headquartered in Greenville, S. C.

Charles Hayes and **Maurice Fishman** have joined the newly established dyeing division of Guilford Mills, Inc., Greensboro, N. C.

Frank C. Bennett has resigned as president of Anniston (Ala.) Mfg. Co., a subsidiary of Chicopee Mfg. Corp. Mr. Bennett will continue in a consulting capacity, although he has become associated with the Anniston and Mobile branches of Thornton, Mohr, Farrish, and Gauntt, Inc., investment bankers and brokers.

Alfred Ewer, director of the cotton goods department of Bemis Bro. Bag Co., has been named as-

Mr. Ewer

Mr. Sharp

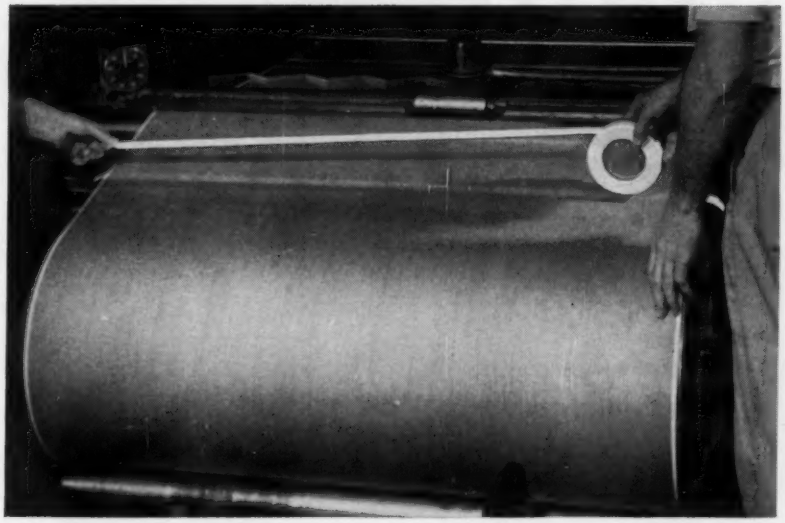
sistant treasurer of the company. **A. R. Sharp, Jr.,** has been appointed director of cotton mill operations which includes cotton procurement and production and sales activities.

As a result of the reorganization of Max Lowenthal & Sons, Inc., from a partnership into a corporation, the following new officers have been elected: president—**Robert L. Lowenthal;** vice-president, general manager, and treasurer—**John W. Hixon;** vice-president and general sales manager—**Harry B. Robinson; Henry F. Bromfield** has been named factory manager in charge of manufacturing.

James F. Magarahan has been named vice-president and general

Continued on page 34

these "sandwiches" on beams save time...



when they are made with TEXTILE TAPES FROM 3M

Beams are handled much more quickly and easily – and, even more important, downtime is reduced to an absolute minimum – when the ends are held with sandwiches of "Scotch" Brand Textile Tapes. One strip below, one strip above – every end is held in place. So, whether used at the warper or slasher, you're always assured complete yarn alignment on every beam. For more information, contact your 3M Representative or nearest "Scotch" Brand Tape Distributor . . . or write: 3M Co., 900 Bush Avenue, St. Paul 6, Minnesota, Dept. IBO-121.

REG. U.S. PAT. OFF.
SCOTCH BRAND

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

"SCOTCH" IS A REGISTERED TRADEMARK OF 3M CO., ST. PAUL 6, MINN.

NEW ®TERMACO TYPE "M"

with *HYDRAULIC* DRIVE

Cleans

Roving Bobbins up to

14 x 7"

SAFE – EFFICIENT – ECONOMICAL

Quick Return on Investment

THE TERRELL MACHINE COMPANY, INC.

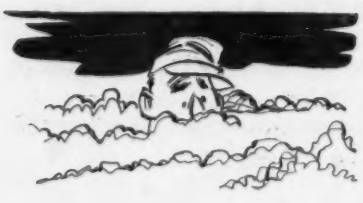
POST OFFICE BOX 928 — 3000 SOUTH BOULEVARD

CHARLOTTE, NORTH CAROLINA

NEWS IN BRIEF

ACMI's Six-Point Program. American Cotton Manufacturers Institute has recommended to the government six basic principles for international negotiations on world textile trade: 1. Coverage of all fibers. 2. A ceiling on imports, below the level of the year ending last June 30. 3. Overseas manufacturers have no vested right to any part of the American market. 4. No separate agreement with one particular country should be entered into by the U.S. 5. U.S. authority to act against both participating and nonparticipating countries should be established. 6. Agreements should be for at least 10 years.

Foam Here to Stay. Foam is here to stay as a major factor in the outerwear industry, but its future "depends on the styling of fabrics specifically for this application and the maintenance of standards for density, cell count, and uniformity in the foam," according to Werner H. Norman, textile sales director for General Foam Corp. He foresees greater use of foam laminates not only with outer shell fabrics but also with lining fabrics, permitting greater flexibility of design and substantially simplifying inventory problems.



Cotton Classing "Antiquated"? A call for cotton-industry people to work together to see that the price of cotton in the future reflects quality and value, rather than just the "antiquated" method of grade and staple now used by the government in classing cotton, was sounded recently by W. G. McCabe, vice-president of J. P. Stevens & Co., Inc. This would tend to eliminate the need for "so-called pressure groups" (grower, mer-

Labor-Management News

"Raise Wages"—UTW. Average wages in the textile industry should be brought in line with the general industrial average, George Baldanzi, president of United Textile Workers, told the Southern Conference of the union which met in Charlotte, N. C., recently.

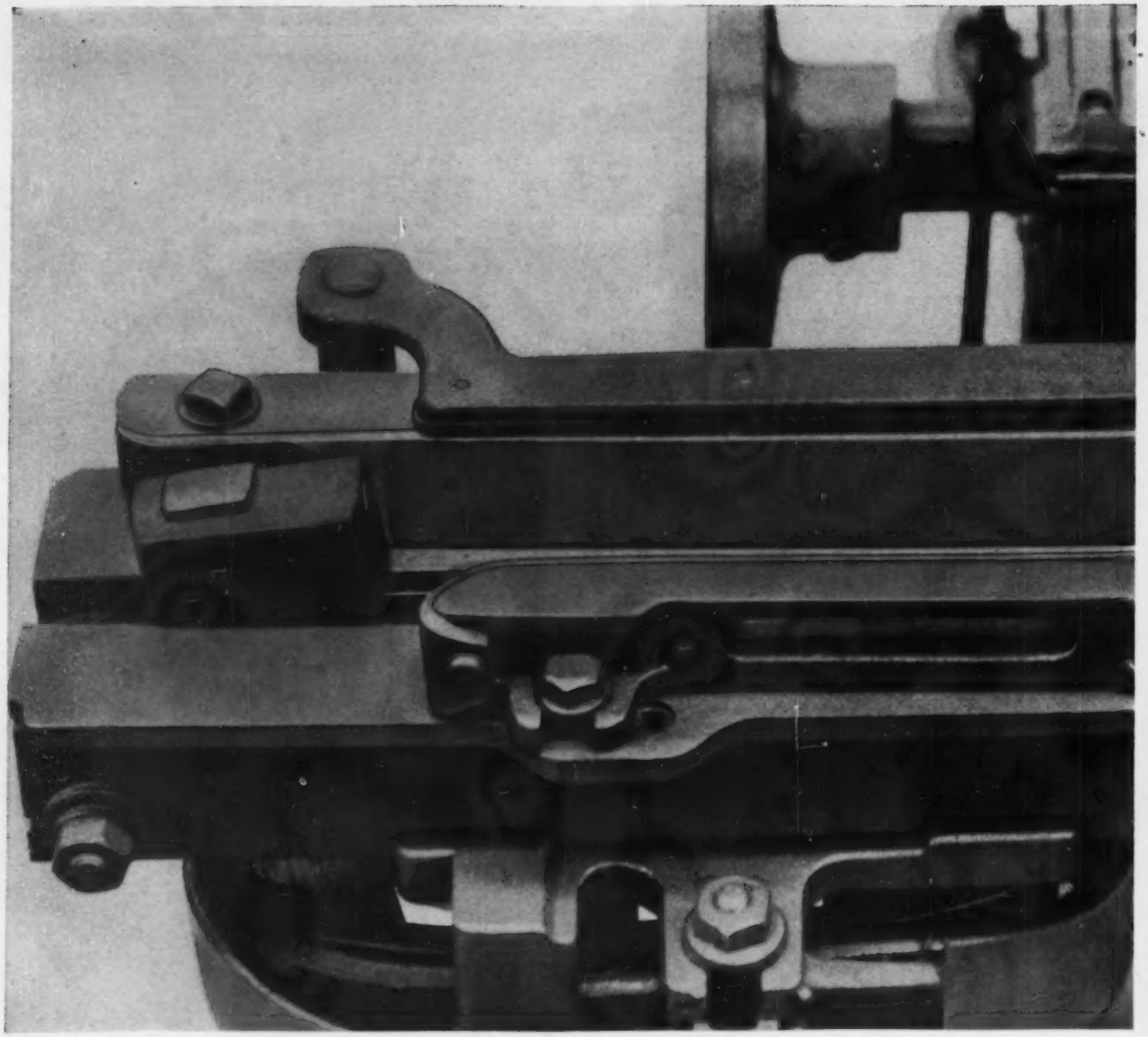
Switch Unions. The 375 employees of Troy Mills, Inc., Troy, N. H., changed their affiliation to Textile Workers Union of America from the independent Troy Textile Workers Union in an election recently conducted by National Labor Relations Board.

New Pact at Botany. Botany Finishing Co., Passaic, N. J., and Textile Workers Union have signed a new contract calling for a hike in hourly wage rates and improved hospitalization plan.

Agree on Pensions. Textile Workers Union and Bradford Dyeing Association (USA) have agreed in principle on a pension plan for the company's employees. Bradford will contribute $5 per month per employee during the contract year 1961, and $7 per month in 1962.

No Election at Hanes. National Labor Relations Board has turned down a request by American Federation of Hosiery Workers for an election at Hanes Hosiery Mill Co., Winston-Salem, N. C., ruling that the knitters and fixers whom AFHW was trying to organize do not constitute an appropriate unit for representation.

Union Loses. Employees at Clearwater Finishing Co., Clearwater, S. C., recently voted 496-304 against representation by Textile Workers Union of America. TWUA lost a similar election at the plant in 1952.



CN-889 is a tough, dimensionally stable fiber material, unaffected by changes in temperature and humidity. It requires less break-in, less resetting, less frequent replacement—and thus adds productive hours to your looms.

Reduce costly downtime with Armstrong CN-889 loom binder covering

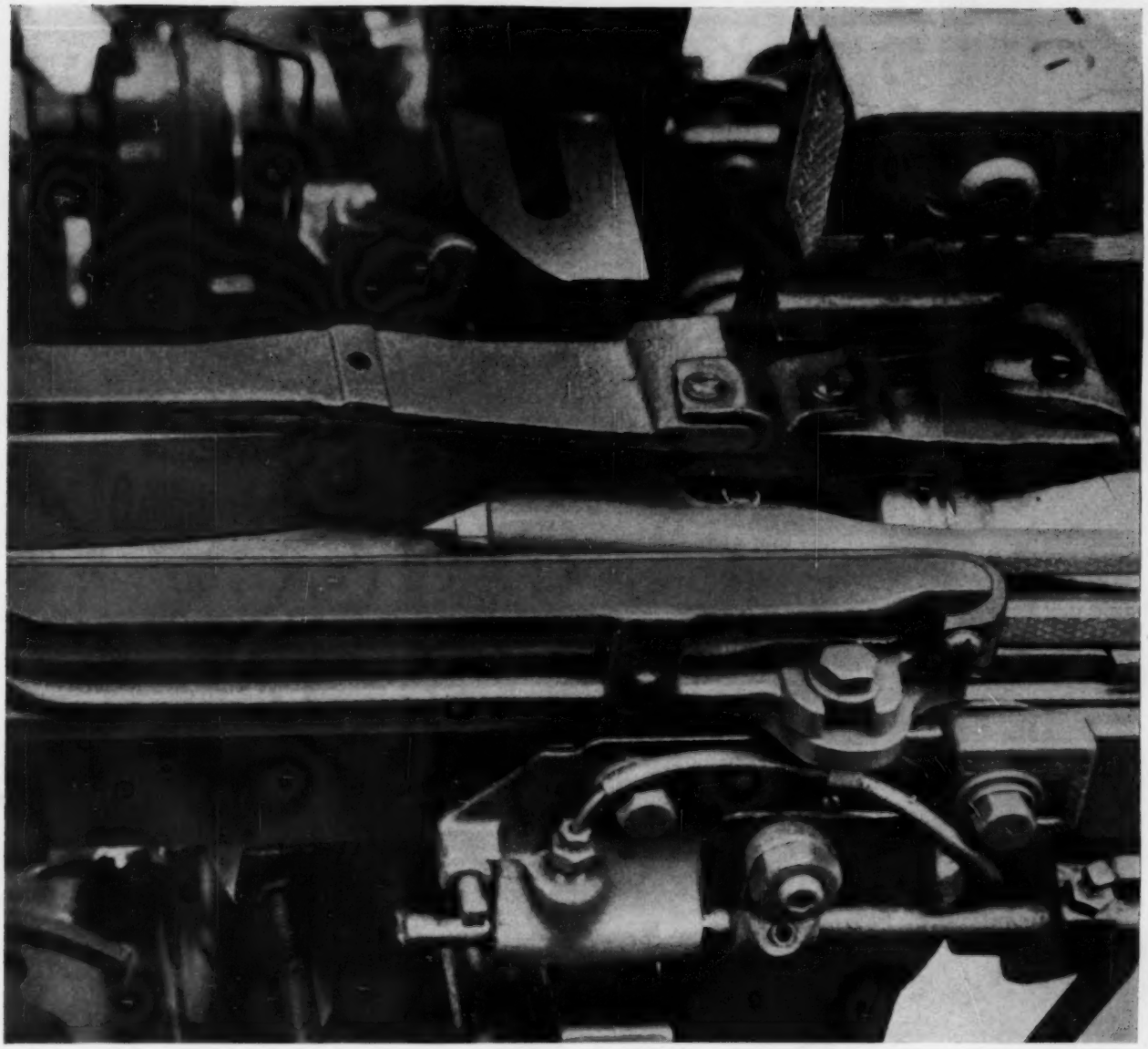
CN-889, a new Armstrong-developed synthetic covering for loom binders and box fronts, can reduce costly downtime on your looms.

CN-889 is inherently stable, so it's unaffected by variations in temperature and humidity that can impair the performance of other coverings.

As a result, CN-889 requires less break-in time and less resetting. And it outwears natural materials even on looms where heavy plastic shuttles are used.

This means fewer shutdowns for adjustment

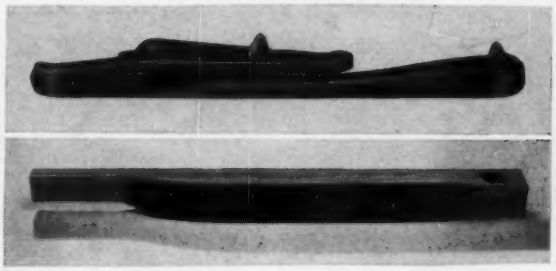
For further information use Handy Return Card, Page 175



and replacement of binder and box front coverings . . . and more productive hours for your looms.

CN-889 gives you all these operating advantages, yet it costs no more than other loom binder materials. Why not arrange to test this new material right away? Prove on your own looms how well it works.

Your Armstrong man will be glad to help arrange a test. Call him or write to Armstrong Cork Company, Industrial Division, 6912 Ivy Street, Lancaster, Pennsylvania.



Armstrong

LOOM SUPPLIES

a more profitable way from THIS to THIS

WHITIN model N spinning

Nearly 500,000 spindles of Model N Spinning for cotton and blends have been sold in just two years. Such rapid success can mean only one thing — that mill men see in it just what they need — a functional, high-value, low-cost frame that's lean, trim and versatile. Compact in design and price, it will repay you with years of outstanding performance and efficient production.

If out-dated, non-competitive spinning is whittling down your profits, now's the time to make your move. Call your Whitin representative today.

WHITIN

WHITIN machine works

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

The best way to better yarns

chant, and mill), he said. "Classification by grade and staple standards alone is antiquated; farm and mill technologies have made rapid strides, but we still have the same old classification methods. Let's be realistic and interpret the cotton fiber in its proper perspective; until then, cotton will not be totally competitive and until such time as it is, differences of opinion between growers, merchants, and mills will continue to exist."

Record Tufted Sales. More tufted

carpets moved from mill to consumer in the first half of 1961 than in any similar period in the history of the industry, the Bureau of the Census reports. They were valued at $241 million—up 8% over the first half of last year and more than the total for the entire year 1956.

Ends-Down Study. What causes ends-down in spinning? Another approach to this problem will be taken by Auburn University, Auburn, Ala., under the terms of a research contract recently signed with the U.S. Department of Agriculture. Auburn will study the relative ranking in importance of fiber properties and spinning processing variables on end breakage in spinning, using large-scale spinning tests. Goal: to aid the textile

"Cotton program—not imports—real problem"

■ THE COTTON PRICE support program is "completely ineffective and outrageously expensive," and Congress should be persuaded to discard it, according to James E. Robison, president of Indian Head Mills, Inc.

The taxpayers and the textile industry have paid out directly some $3.8 billion during the past five years for "King Cotton's Ransom" without solving the problems that price supports were intended to solve, he said. He estimated that the textile industry alone will be called upon in the current crop year for a further ransom of $360 million and said "elimination of this $360 million ransom this year would go a long way toward solving our problems—including the import problem."

The Indian Head executive said he does "not agree that imports are the single most damaging problem facing the textile industry. King Cotton's ransom payments are much more damaging than all the industry's other problems combined."

He also stated that the "cotton problem" can be separated from the other farm problems, and that this is a particularly appropriate time to do so.

"The . . . cotton mills are getting a raw deal," he asserted. "We have been paying an outrageous ransom for King Cotton and want the captive delivered up to us free and clear."

The Indian Head president calculated the rasom paid in just the past five years as follows:

The taxpayer has put up $2.5 billion to finance price support, acreage allotment, and export subsidy programs—an average of $500 million per year!

The textile industry has paid $1.3 billion through the purchase of raw cotton at controlled prices above world market prices.

The major portion of the textile industry's ransom payment has been paid by textile mill stockholders and employees, Mr. Robison asserted. He explained that competitive conditions have made it impossible to pass along all of the excess cotton costs to the consumer in the form of higher prices. Actually, the Department of Labor wholesale price index for cotton textiles stands today at 97% of the 1947 level, he noted, adding that the industry's cotton "ransom" payment just about equalled profits from all textile mill products in the 1955-60 period.

"THE EFFECT on the U. S. textile industry of paying and largely absorbing this portion of King Cotton's ransom has been absolutely devastating," Mr. Robison declared, citing the following developments:

From 1947 to 1961 industrial production in the United States increased by 50% while textile production declined by 2%.

During the same period textile employment decreased from 1,325,000 to about 940,000.

Textile wage rates are below other manufacturing industries, amounting to about 70% of the average for all manufacturing.

Profits on textile mill products are among the lowest of all major industries in the country, currently running around 2% of sales and 4% on stockholders' equity—less than half of the average for all manufacturing industries.

With very few exceptions, textile mill securities sell at substantial discounts from their book values.

THE COTTON GROWING industry itself has actually suffered heavily from the price support program intended to help it, Mr. Robison demonstrated:

American raw cotton has lost its position of leadership in the World cotton trade, with U. S. production remaining static since 1933 at around 13 to 14 million bales, while foreign production has more than doubled to about 30 million bales a year.

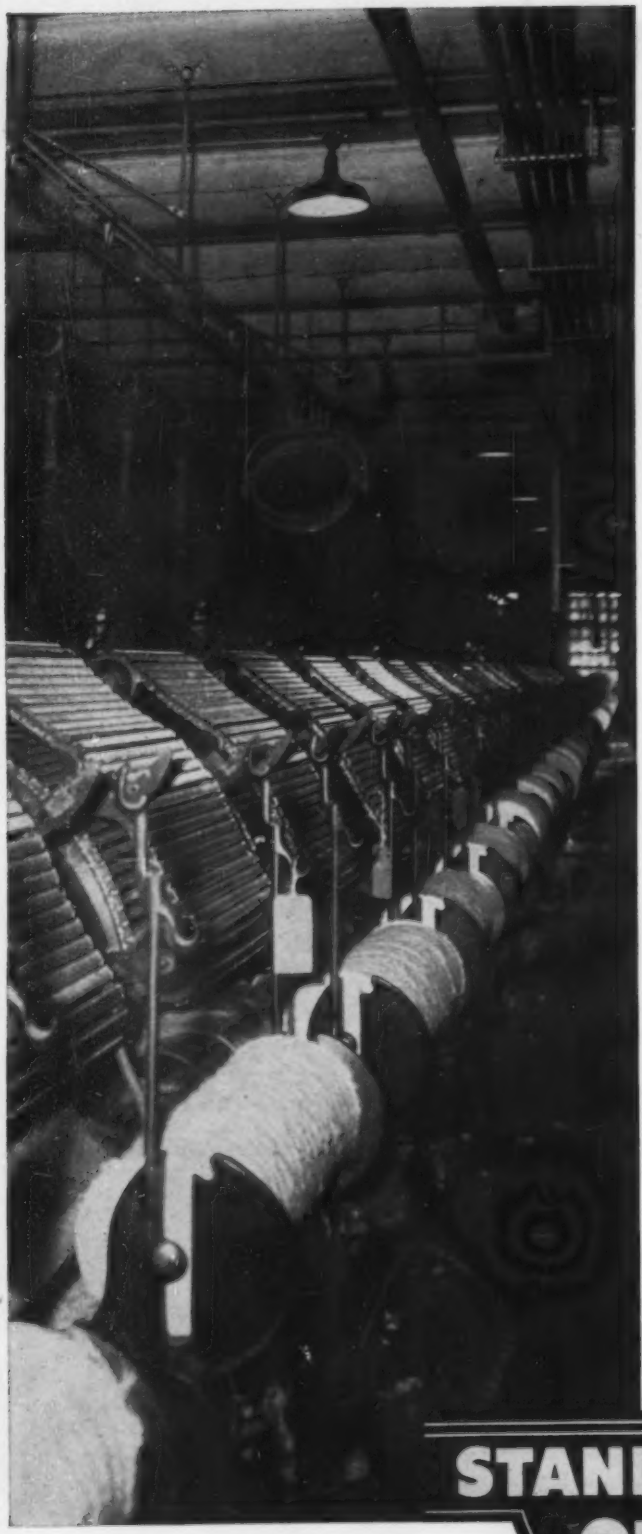
The quality of American cotton is not as good as it could or should be because the Government stands ready to buy, regardless. There has been a definite deterioration in the spinnability of domestic cotton fibers received at the mills. And American cotton is no longer the preferred cotton in foreign markets.

Consumption of cotton by U. S. mills has declined from 9 million bales in 1940 to 8.2 million in 1960-61, while cotton consumption by foreign mills has increased from 17 to 39 million bales.

The tremendous growth in the use of synthetic fibers throughout the world is partly due to artificially high support prices for cotton.

Strict acreage controls have prevented cotton production from flowing to those producers who can do the most efficient and economic job in areas best suited for cotton growth.

The textile industry, one of the largest and most important in the country, has been seriously weakened through erosion of capital values, loss of employment, inadequate research, and lagging modernization.



a long array of years

For seventy-four years the Southern textile industry has relied upon Standard Oil lubricants to do a dependable protective job with maximum economy.

During this long array of years, we have pioneered in offering new lubricants to meet changing machinery, because the combined facilities for testing and research behind Standard Oil lubricants are unequaled. These facilities are available to tackle your problems whether they are "run of the mine" or involve a new or unusual lubricant application.

STANDARD OIL LUBRICANTS

STANDARD OIL COMPANY
(KENTUCKY)

For further information use Handy Return Card, Page 175

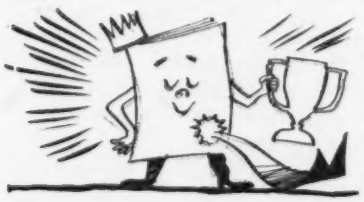
industry in selecting processing organizations and cottons having fiber properties that will permit efficient spinning and produce yarns of maximum quality.

More Machine-Picked Cotton. Last year for the first time more than half of the U.S. cotton crop was harvested mechanically. Here

are the percentages of the crop mechanically picked (which includes machine picking and machine stripping) for the past five seasons:

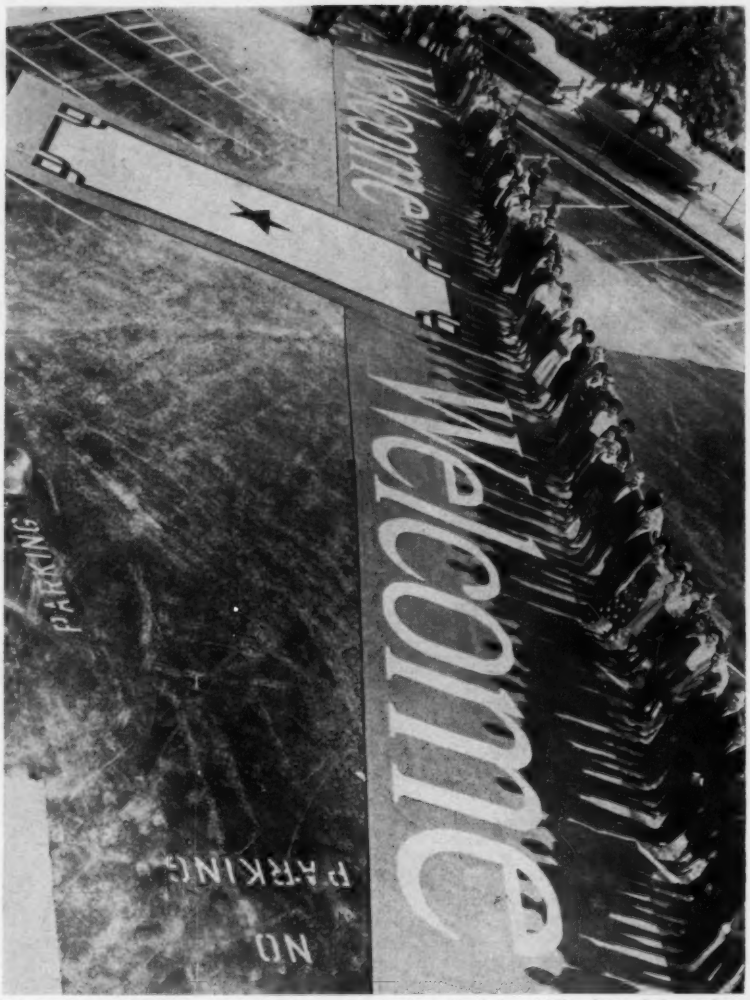
1956—27%
1957—32%
1958—34%
1959—43%
1960—51%

Company Publications Contest. If you think your company publication is pretty good (and many published by textile mills are), why not enter it in the First Annual Company Publication Study Awards competition for excellence in visual presentation? There are



four $100 first prizes. The competition is being conducted by Edward Stern & Co., printers, under the sponsorship of New York University and the American Association of Industrial Editors. For details and entry blanks, write to "Company Publications Competition," c/o Edward Stern & Co., Independence Mall, Philadelphia 5, Pa.

Wool More Competitive. Wool gained a few marches on its competitors during 1961, the Wool Bureau reports. Production of these wool items either was higher last year than competitive products, or decline in them was less: men's midweight wool suits, men's lightweight wool suits, and women's wool suits. Only place where ground was lost was in men's slacks.



This is the world's biggest "Welcome Rug," tufted at the Rabun Mills plant of James Lees and Sons Co. at Rabun Gap, Ga. It's 120 feet long and was made for Macy's, New York. It was used during their recent 103rd birthday sale and stretched from 34th St. to 35th St. in front of the Broadway entrance to the store. The face is 501 filament nylon.

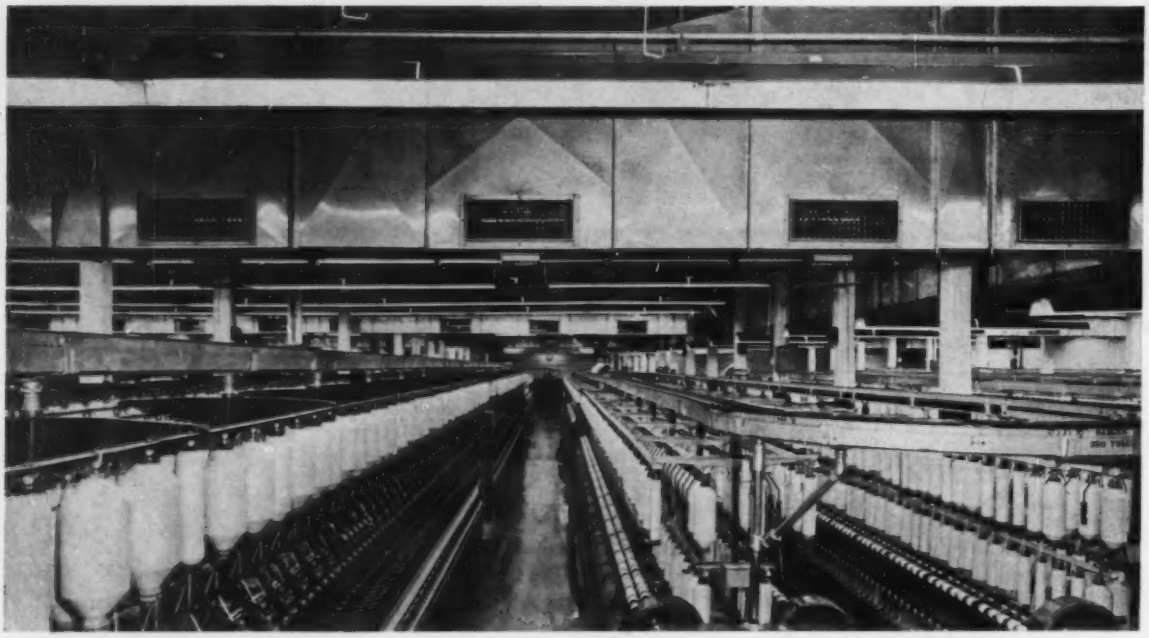
Seat Belts Required. All new cars sold in Wisconsin, beginning with the current models, must have two safety belts in the front seat, according to a law which went into effect recently.

PCTS Grows. Philadelphia College of Textiles and Science enrolled 205 new students this semester, bringing total enrollment to 493. This is up 20% from last year and is the highest since 1949.

Industrial Fabric Committee. American Society for Testing and Materials has formed a new subcommittee on heavy industrial fabrics within its textile Committee D-13. Charles R. Bradford, Georgia Duck & Cordage Mill, Inc., Scottdale, Ga., is temporary chairman.

Bahnson
REFRIGERATED
CENTRAL STATION
AIR CONDITIONING

at CHERAW COTTON MILLS, INC. "allows significant production improvements TO MORE THAN JUSTIFY THE INVESTMENT"



W. Manning Malloy
Vice Pres. & Sec'y
CHERAW COTTON MILLS, INC.
Manufacturers of Hosiery Yarns

A 300-ton refrigerated central station system conditions the air in Cheraw's carding, winding, and spinning rooms. The complete system was custom designed and manufactured by Bahnson especially for Cheraw Cotton Mills, Inc. Reports Mr. Malloy: *"our Bahnson refrigerated air conditioning system has been most satisfactory, and has helped us to improve efficiency and increase production."* Whether you are interested in a completely new installation or in adding refrigeration to your present system, call in Bahnson for help and know-how.

Write for Bulletin 103

Bahnson AIR-O-MATION

THE BAHNSON COMPANY — WINSTON-SALEM, NORTH CAROLINA

For further information use Handy Return Card, Page 175

RECENT TECHNICAL AND COMMERCIAL DEVELOPMENTS

by J. B. Goldberg
Consultant to the Textile and Allied Industries

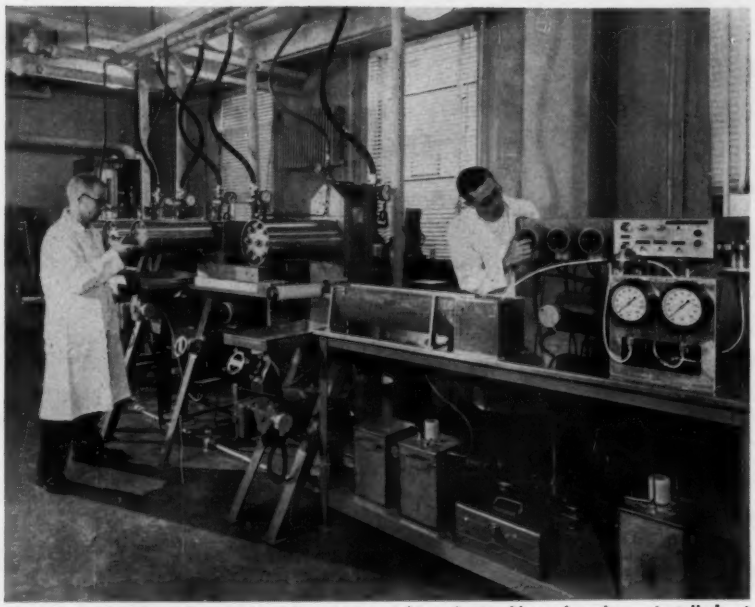
Exclusive

MACHINERY AND PROCESSES

Now It's Bale to Sliver. Under development by SACM, the French textile machinery builder, is a small and simple machine called the Flocomat which automatically opens, blends, and feeds cotton directly to the licker-in of a card. It is expected that the apparatus (one per card) will not only eliminate the need for conventional opening and picker rooms and machinery but also will more thoroughly clean the stock with less damage to the fibers. Normally, eight Flocomats will be supplied cotton by one bale distributor (endless conveyor type), with each of them taking small but equal quantities (only a few ounces) from every bale in the blend. With cards delivering sliver into large cans, only one operator will be required for the entire eight-machine unit and the eight deliveries of drawing which follow it.

More SACM Developments. Commercial availability of a portable evenness tester and an electronic slub catcher was recently announced by SACM. Under development are (1) a cotton comber which does not require a lap winder or the labor to run it and (2) a shuttleless loom featuring simplicity and very high productivity.

Super-Speed Yarn Crimper. The English Scraggs Group have announced introduction of an entirely new crimper for continuous filament yarns. It is claimed that this machine has higher control standards than ever before and tests have been made at speeds of from 200,000-300,000 rpm. Transistorized individual temperature controls for each 24" heater, transistorized monitor units, and spinners of entirely new design along with a new principle of cushioned precision drive constitute the basic improvements. (See page 146 for further details.)



Equipment for wet, dry, and melt spinning of synthetic fibers has been installed at Southern Research Institute, Birmingham, Ala. It can produce monofilaments or multifilament yarns from batches of polymer as small as 25 grams, and was built by Institute personnel.

FIBERS AND YARNS

Strongest Polypropylene Yarn. Imperial Chemical Industries, Ltd. claims their new "Ultron" multifilament polypropylene yarn, with tenacity of 8-9 grams per denier, is the strongest in the world. Stretch properties are midway between Terylene and nylon. Ultraviolet degradation is reduced by stabilization. Monofilament yarn is expected to be available shortly.

Improved Creslan Acrylics. American Cyanamid has developed a Creslan acrylic staple and tow for high bulk yarns, as well as a Type 61 which is whiter and acid dyeable. Also being evaluated are 20- and 80-denier staples.

New Dacron Polyester Products. Du Pont is introducing an improved Type 62 Dacron filament yarn with better dyeing properties; a Type 99 fiberfill especially designed for use in pillows; and a Type 67, available in 1,100 denier, for cordage.

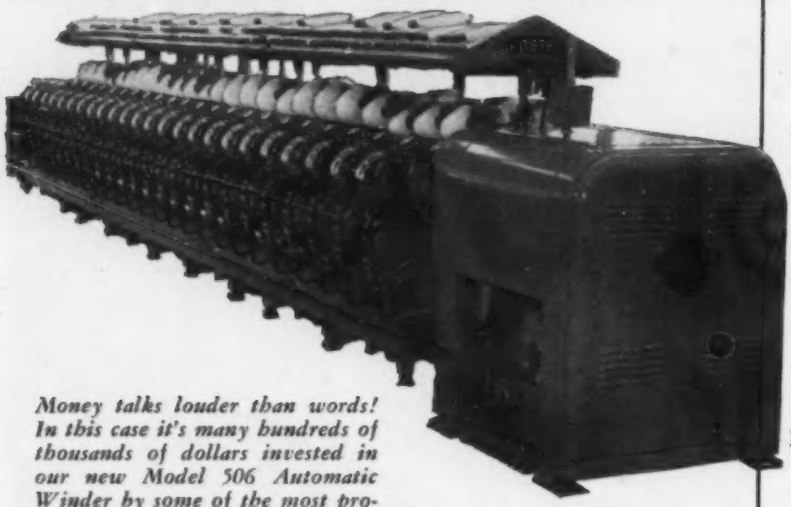
Elastic Fiber. Eastman is reported to be experimenting with a new polyester elastic fiber, T-1700, claimed to be resistant to discoloration, chlorine bleach, and heat.

Bulky Rayon Yarn. American Enka was recently awarded a patent on means for producing a bulky filament rayon yarn by withdrawing the extruded viscose from a setting bath, passing it through a second weakly acid bath, imparting stretch, then directing it at reduced tension into an air jet.

Polyester Resin for Japan. Technical assistance for the manufacture of polyester resin for textile fibers will be given by Goodyear Tire & Rubber Co. to Toyo Spinning Co., Ltd., of Osaka, Japan,

Continued on page 88

FOSTER 500 SERIES
AUTOMATIC CONE WINDER



Money talks louder than words! In this case it's many hundreds of thousands of dollars invested in our new Model 506 Automatic Winder by some of the most progressive mills in the country. We ask for no better endorsement. Do you?

Some of the mills who are now using it or have placed orders for it.

Linn Mills Co.
Landis, N. C.

Corriher Mills
Landis, N. C.

A. M. Smyre Manufacturing Co.
Ranlo, N. C.

Russell Manufacturing Co.
Alexander City, Ala.

Swift Spinning Mills
Columbus, Ga.

Flagg Utica Mills
Grantville, Ga.

Spray Cotton Mills
Spray, N. C.

Firestone Synthetic Fibers Co.*
Hopewell, Va.

E. I. Dupont de Nemours & Co.*
Seaford, Md.

*These companies have ordered our Model 510 — another version of the 500 series.

50% MORE PRODUCTION PER OPERATOR AT TWICE THE WINDING SPEED WITHOUT JEOPARDIZING YARN QUALITY –

ELECTRONIC TENSION AND SLUB CATCHER

AUTOMATIC SIZE STOP MECHANISM

AUTOMATIC SUPPLY BOBBIN EXCHANGER

— that's why these mills have ordered. They want more production at lower cost, but they cannot afford it at the expense of yarn quality. The Model 506 *protects* yarn quality because it does not attempt to tie knots automatically. The operator does it with a standard high speed knotter and has an opportunity to test the knot at the same time (taking a small fraction of a minute). Thus any chance of wild yarn, tangles, bobbin rings, crossed ends, uneven package density or rough yarn (which can occur with automatic knot tying) is eliminated.

AUTOMATION is confined to threading up, slubbing, cleaning, disposal of empty bobbins, gauging full cones, donning full bobbins and doffing empty bobbins. None of these operations can jeopardize yarn quality.

CONE QUALITY is even better than that of the Model 102 cone (standard for the sales yarn market for many years).

HAVE YOU INVESTIGATED our Model 506 Automatic Yarn Winder? If not, why delay? Send for our Model 506 brochure.

FOSTER MACHINE COMPANY

A YARN WINDER FOR EVERY PURPOSE

Westfield, Massachusetts, U. S. A.

290-I

Member of American Textile Machinery Association

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For further information use Handy Return Card, Page 175

EXECUTIVE VIEWS

Prepared by a man who is closely identified with the textile industry.

Operation Rat Hole

At $15 million a day!

ONE OF THE cardinal principles on which the late, unlamented Adolf Hitler built his edifice of power was the assumption that if you would make any improbable statement often enough and violently enough, people would begin to believe it, ultimately accept it, and finally swear by it as unquestioned truth. This was a political principle not exclusive with Hitler, but used by him with such outstanding success as to prove its practicality. Haven't we been proving the same thing with our campaign for foreign aid?

Amid the wreckage and desolation following the last World War, the government of the United States, as a thoroughly practical and sensible proposition, undertook to help some shattered European nations get back on their feet as going concerns rather than risk seeing them go by default into the clutches of the awful tyranny of Communism. These European nations which were in dire straits had been rich and prosperous countries, highly industrialized, and centers of learning and culture. They had everything that it took to get back in business except quickly available capital, and that we undertook to supply.

We did the same for the Japanese people after we had defeated them in war, and a great many American businesses are finding that our efforts in helping these people back on their feet were wildly successful. Factories built with our money are competing with us on every hand.

In the course of all of this foreign aid, our politicians found that they had a perfectly wonderful pork barrel, which afforded a ready means of solving many of our domestic problems, or at least helping to solve them. Our farmers were overproducing and we had tremendous gluts of cotton, corn, wheat, and other products. By giving these things away in the name of foreign aid, which was supposed to be an inescapable item of national defense, we eased the gluts. In one year we donated some four million bales of cotton to European countries, and saw them come bouncing back in the form of yarn and cloth, sometimes offered at prices below the value of the cotton in these goods.

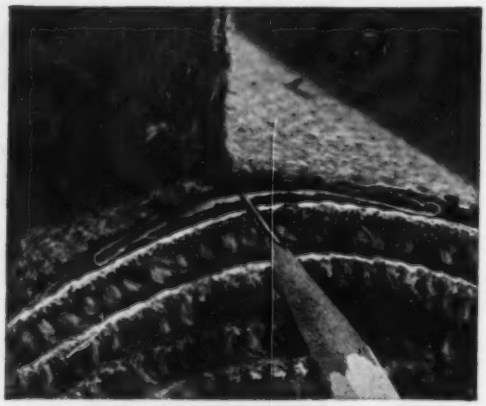
IN ADDITION to getting rid of a lot of surplus products, we stimulated domestic business by grants in the name of foreign aid, and in a few years this foreign aid program became a vested interest, and its discontinuance would have brought hardship to several million American farmers and working people. Foreign aid, however, has continued to be sold to the American people as a necessary part of a national defense, and the more we give away, the more defense we are supposed to get.

Quite recently, a conference met in Uruguay to seriously discuss the partitioning up of 20 billion dollars of United States money among the other countries of North and South America—exclusive of Canada, which, like ourselves, is supposed to chip into the kitty that is to be divided. Newspaper reports on the meeting indicated that some of the most serious differences proved to be on the matter of who got what, and the fear of certain small nations that the bigger ones would get the lion's share of the gravy.

Probably nobody knows exactly how much to charge up against foreign aid since it started some 15 years ago, but estimates are generally around $85 billion. Assuming that we have been dishing out money for foreign aid for 15 years, and have given away $85 billion, this amounts to just over $15 million a day that the American people have been contributing to somebody somewhere else besides the United States. We have our own domestic aid to pile onto that, and some querulous commentators have wondered if we don't have enough hard-up people scattered

NEW protective "B" seam for carpet covers eliminates damaging effects of dirt and water

Polyethylene-coated kraft paper strip folded and pasted along underside of carpet cover seam



With carpet inside carpet cover, protective strip lies flat between carpet and cover stitching

Bemis development reduces shipping damage

The new Bemis "B" seam forms a flexible shield directly beneath the carpet cover stitching to prevent water, dirt, and dust from filtering through to the rug. The polyethylene-coated kraft paper strip is folded and pasted into the carpet cover seam; as the cover becomes taut over the carpet, the strip is drawn flat under the stitching (see illustrations).

The Bemis "B" seam eliminates one major cause of carpet damage in shipment.

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Burlap Tite-Fit® Tubing; also burlap piece goods, cotton thread and twine

Specialty paper bags and covers for textile rolls and carpets

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around the United States to bring into question the desirability of shunting so much money abroad. There are other persons who feel that we spend far too much for domestic aid and ought to cut out the foreign aid entirely when it is aimed at doing something for some foreign country that we haven't been able to do for our own.

IN THE ENDLESS columns of discussion of this foreign aid problem, we have found a minimum of effort to analyze the subject of what we can really do to help people who are willing to help themselves, and how much we are justified in spending to do it. Practically all of the argument in favor of foreign aid has harped on the necessity of dumping countless billions into a hundred countries without much thought as to the methods of dumping and the question of who gets the dumpage.

Practically all of this foreign aid is held up to us as a necessary expense in the cold war, with the assurance that if we don't try to buy the friendship of people all over the world, the Russians will outbid us and take these people under their wings. Friendships and loyalties are seldom, if ever, for sale; but even if we assume that the expenditure of a lot of money in a lot of countries is going to accomplish something worthwhile, we must consider the mechanics of the expenditure.

When the Communists go into a country, their explicit aim is to overthrow the government of that country and replace it with a Communist form of government. Any Russian gifts to any country can therefore be taken for granted as an entering wedge in the destruction of that country's government, and it is reasonably certain that the Russians are willing to spend more backing their subversives who are trying to wreck the country than in helping the people of the country.

On the other hand, when we go into a country to try to help it do anything, we always feel that we must work through the established government. The only alternative to this, if we want to help the people of a given country, is to foment a conspiracy to overthrow the government of that country and replace it with one of our own choosing, just as the Communists would do. This is not an acceptable choice because it is contrary to the feelings of the people of the United States to engage in any such wretched conspiracies as this, and if we did it would bring us down to the level of the Communists when we are trying to stay a good bit above that level.

A Bone for Old Faithful

Granted then that we have to work through the established government, it is quite necessary that we consider the wishes and the plans of that government in any program for spending American money. Great numbers of the governments with which we must deal are tight little dictatorships or near-dictatorships, controlled by a tiny fraction of the people in the country. We are concerned with the sad lot of the common people, and no American taxpayers are shedding any tears over the problems of millionaires lording it over vast estates and living the very essence of the good life. Yet, these are generally the people who control the governments in most countries which are classed as underdeveloped. If we simply hand over vast sums of money to the established governments in many countries it will almost immediately find its way into the already well lined pockets of the ruling classes, and the rank and file of the common people whom we are trying to help will see little results from the presence of this money, except the inevitable inflation that it will cause and an increase in their cost of living.

So, how are we to go about uplifting the economic standards of the people we profess we wish to benefit? The first step proposed in practically every country is agrarian reform, because in underdeveloped countries the land gets into the hands of a few people and the many till this land under very onerous conditions. The city workers who are generally drawn from the country are little, if any, better off than the tillers of the land. Our proposal is therefore that the owners of vast areas of land should cheerfully agree to the breaking up of their estates and the distribution of land among the land-

Look what Leesona's
done to **LARGE PACKAGE RING TWISTING**

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...with the Number 512

They've made it more economical than ever — with cost-cutting operation of the Number 512 *Ring Twister*. Look at these important improvements which give you larger packages of better quality at lower cost: 12-inch traverse . . . Heavy Duty Spindle . . . 3 to 1 builder cam ratio . . . lightweight, smooth traversing ring rail . . . Fast-acting stop motion that reduces knots in the ply and eliminates drop-ply.

Also, consider the reduced maintenance with sealed oilless bearings . . . a full length roller beam that protects against lint . . . and removable, easy-to-clean 7-unit spindle separators. These and still other improvements make the Number 512 the most advanced Ring Twister for all types of yarn. Find out how it can benefit your mill. Contact your nearest Leesona Sales Engineer for the new brochure containing full details, or write LEESONA CORPORATION, Providence 4, Rhode Island.

LEESONA

The Number 512 proves again... *Leesona leads... to better fabrics*

less peasantry.

This certainly sounds like a worthy proposition, but will people in any other country give it a better welcome than the people in the United States have always given it when the same thing has been proposed here? Before the Civil War a few thousand families in the southern states owned practically all of the good land, and none of these families was in any rush to see the plantations split up and divided among people who would have liked to have some land.

After the Civil War the slogan of "40 acres and a mule," which was popular with the carpetbaggers and with the Negroes who were supposed to get the 40 acres, was anything but popular with the people who still owned the land, but who weren't sure that they could pay the taxes on it much longer.

Out in our western states there were, and still are, huge ranches measured not by acres, but by sections or square miles. Some 20-odd years ago a leading American politician in a campaign tour through the West suggested that these ranches were too big and that the country would be better off if they were chopped up into smaller holdings so that a lot of people could own 50 cows each, instead of a few people owning thousands per ranch. This suggestion was met with reported indifference on the part of the ranch hands who recognized it as silly, but with vast disgust on the part of the ranch owners who also recognized it as absurd, but had seen the national government do so many other stupid things that this one did not seem to be beyond the bounds of possibility.

IN THE UNITED STATES, as well as in many other countries, it has been repeatedly shown that the small landowner is not always efficient in the management of his land. We understand that there have been some South American countries that tried this business of giving everybody a little piece of land, but found that in a few years poor management had eroded and ruined the small holdings and the people were worse off than they were before. Here in the United States thousands of worn and gullied farms testify to the incapacity of many a small farmer, and people with capital have often bought up these ravaged acres and with knowledge and persistence have made them fruitful and valuable.

It seems that what most of these underdeveloped nations need is help to educate their people,

Continued on page 62

FUTURE EVENTS

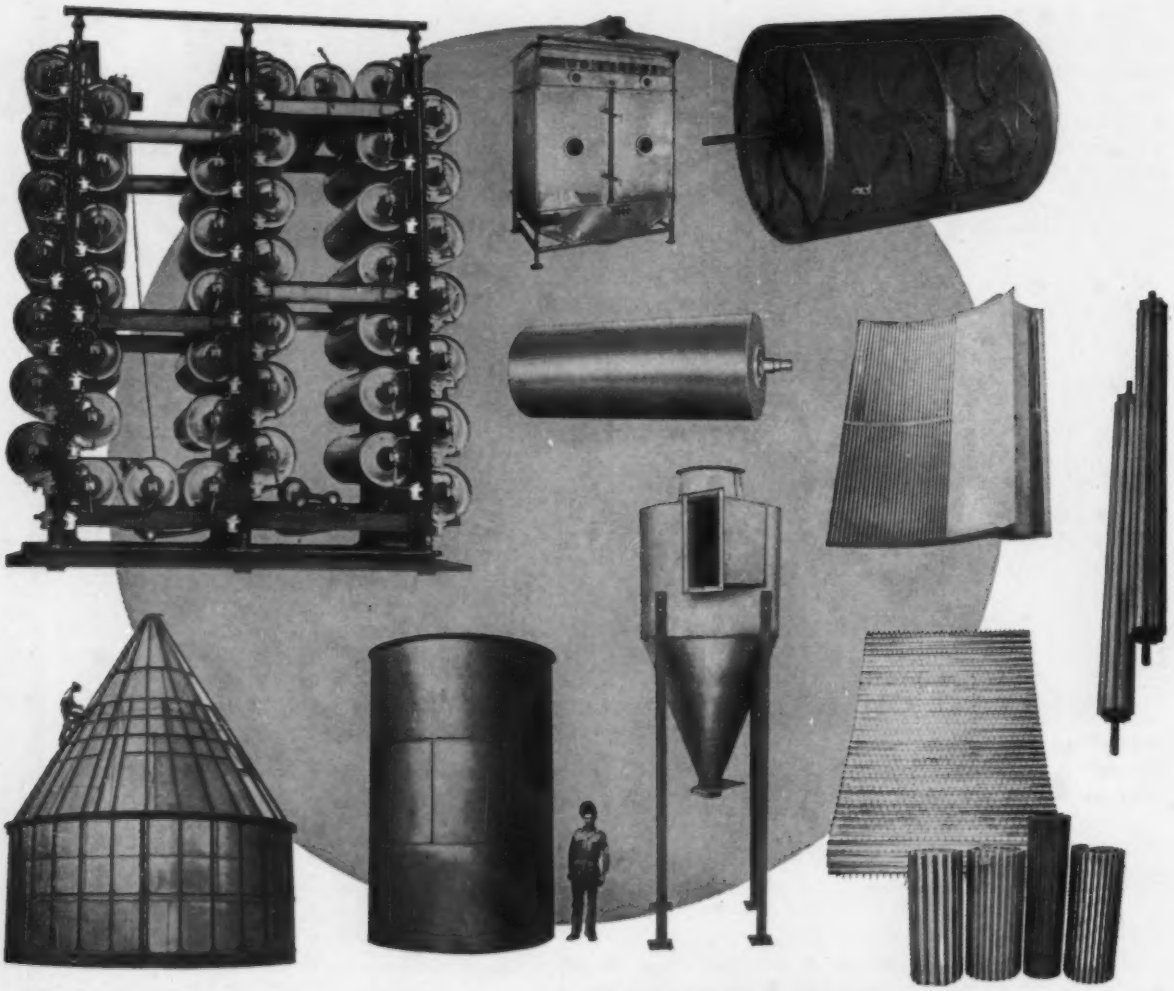
Date		Event	Location
Dec.	1	Delaware Valley Section AATCC	Beck's Restaurant Philadelphia, Pa.
	1	Western New England Section AATCC	Shelton, Conn.
	18	Northern New England Section AATCC	Motel 128 Dedham, Mass.
		1962	
Jan.	11-12	Cotton Research Clinic	The Carolina Hotel Pinehurst, N. C.
	12	Hudson-Mohawk Section AATCC	Amsterdam, N. Y.
	16	Metropolitan Section AATCC	New York City
	19	Northern New England Section AATCC	Woodlawn Country Club Newton, Mass.
	20-21	Palmetto Section AATCC	Poinsett Hotel Greenville, S. C.
	27	Piedmont Section AATCC	Hotel Charlotte Charlotte, N. C.
	29-30	National Cotton Council annual convention	New Orleans, La.
Feb.	7	American Association for Textile Technology annual conference	Hotel Commodore New York City
	12-15	National Exposition of Air Conditioning, Heating, and Refrigeration Industry	Great Western Exhibit Center Los Angeles, Calif.
	15-16	American Society for Quality Control, Textile and Needle Trades Div., annual conference	Clemson House Clemson, S. C.
Mar.	15-16	Southern Textile Methods and Standards Association	Clemson House Clemson, S. C.
	22-23	Textile Quality Control Association	Poinsett Hotel Greenville, S. C.
	29-31	American Cotton Manufacturers Institute annual meeting	Biltmore Hotel Palm Beach, Fla.
Apr.	11-13	The Fiber Society (joint meeting with Textile Engineering Div. ASME)	N. C. State College Raleigh, N. C.
	11-13	American Society of Mechanical Engineers, Textile Engineering Div.	N. C. State College Raleigh, N. C.
	25-27	Alabama Textile Manufacturers Association	Buena Vista Hotel Biloxi, Miss.
	25-28	National Association of Hosiery Manufacturers annual convention	Americana Hotel Bal Harbour, Fla.
May	1-4	World Congress of Man-Made Fibers	London, Eng.
	10-11	Underwear Institute annual meeting	New York City
	16-19	Georgia Textile Manufacturers Association annual convention	Diplomat Hotel Hollywood Beach, Fla.
May	30-June 2	Tufted Textile Manufacturers Association annual convention	Diplomat Hotel Hollywood Beach, Fla.
Sept.	5-7	Canadian Textile Seminar	Queens University Kingston, Ont. Canada
Oct.	3-4	Chemical Finishing Conference	Washington, D. C.
	15-19	Southern Textile Exposition	Textile Hall Greenville, S. C.
	24-27	Carded Yarn Association annual meeting	Fort Sumter Hotel Charleston, S. C.
Nov.	14-17	AATCC national convention	Hotel Biltmore Atlanta, Ga.

"Custom tailors" to industry

Since 1926, Sims has been designing and fabricating the specialized equipment called for in the manufacture of textiles.

As "custom tailors" of stainless steel, Sims' recommendations, designs, and fabrications are dictated by your particular problem, need, requirement or application of equipment. And, Sims specialists are on the job from start to finish to assure meticulous attention to even the smallest detail... the craftsmanship that unconditionally guarantees that the finished product will meet and surpass your most exacting specifications.

rolls · vessels · kettles · coils · size boxes · linings · cylinders · machinery · air and material handling systems . . . for textile · chemical · food processing · pulp-paper and other industries



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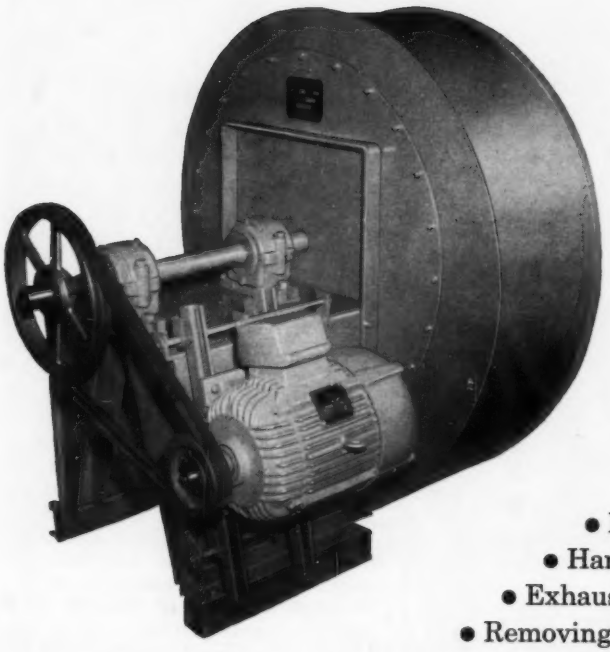
HOW TO HANDLE SOME OF THE MOST PUNISHING AIR JOBS IN THE MILL



- Moving hot gases.
- Handling materials in conveyor systems.
- Exhausting corrosive fumes.
- Removing dust-laden air.

'BUFFALO' INDUSTRIAL EXHAUSTERS

Wherever you find a punishing air job in a textile mill, you're very apt to find a hard-working 'Buffalo' Industrial Exhauster at work. Available with highly efficient air wheel (type AW), front-flanged material wheel (type MW), or open material wheel (type OW) without front flange.

Hot gases, from 200° to 850° F., are being removed successfully by special 'Buffalo' Industrial Exhausters with shaft heat slingers.

Where corrosive fumes would quickly put an ordinary fan out of service, rubber-lined 'Buffalo' Exhausters are handling them with major savings in fan replacement costs.

Next time you have a tough air moving job, call in your resident 'Buffalo' Engineering Representative. He has the experience to recommend the right fan for the job.

"Buffalo"

AIR HANDLING DIVISION

BUFFALO FORGE COMPANY

Buffalo, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

'Buffalo' Air Handling Equipment to move, heat, cool, dehumidify and clean air and other gases.

'Buffalo' Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

'Buffalo' Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Squier Machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

MODERNIZATION
means
PRODUCTION IMPROVEMENT

Mill Modernization never ends in Progressive Mills. As a guide, an up-to-date chart of machinery conditions and production possibilities is constantly followed. Modern management always plans or implements studied improvements accordingly.

MODERNIZATION You can benefit in many ways by Mill Modernization, through Davis & Furber's "Coordinated Production." This type of Production puts into one package D&F new equipment, conversion of existing equipment, supplies, accessories, spare parts, technical and engineering services as needed. It ties them right into your production needs.

THE FIRST STEP The first step is to talk direct to your Davis & Furber man, or contact us at North Andover, or Charlotte. From then on, you can get the following, usually without cost or obligation:

1. Professional Preliminary Counsel.
2. Actual in-the-mill Survey.
3. Formal Fact Presentation.
4. Post-Survey Conference.

YOUR OBLIGATION Your obligation to yourself begins when we show you how you can meet your production requirements profitably and at reasonable cost.

STAY COMPETITIVE Our studies are based on knowing what your woolen processing machinery can turn out *before* and *after* Modernization. The D&F survey will tell you what needs to be done to remain competitive.

Now is the time to start action for immediate or long-range production improvement.

P.S. Copies of the new reprint on Yarn Mill Modernization are yours for the asking. Write today.

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TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
North Andover, Mass.
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MACHINERY MODERNIZATION • ACCESSORIES, SUPPLIES, CARD & NAPPER CLOTHING, GARNET WIRE, TAPES & APRONS
SPARE PARTS • TECHNICAL SERVICE & CONSULTATION

PERSONAL NOTES

(from page 15)

manager of Lyman (S. C.) Printing & Finishing Co., a subsidiary of M. Lowenstein & Sons, Inc.

John W. Walker, general manager of Judson Mills, has resigned to accept the general managership of Kingsley Mill, Thomson, Ga., and Machias Mill Corp., Machias, Me.

Gilbert T. Owren, general sales manager, has been named a vice-president of Glen Raven Mills, Inc.

Elsie Murphy, president of Old Bennington Weavers, Inc., has been

elected vice-president of Woolens and Worsteds of American, Inc.

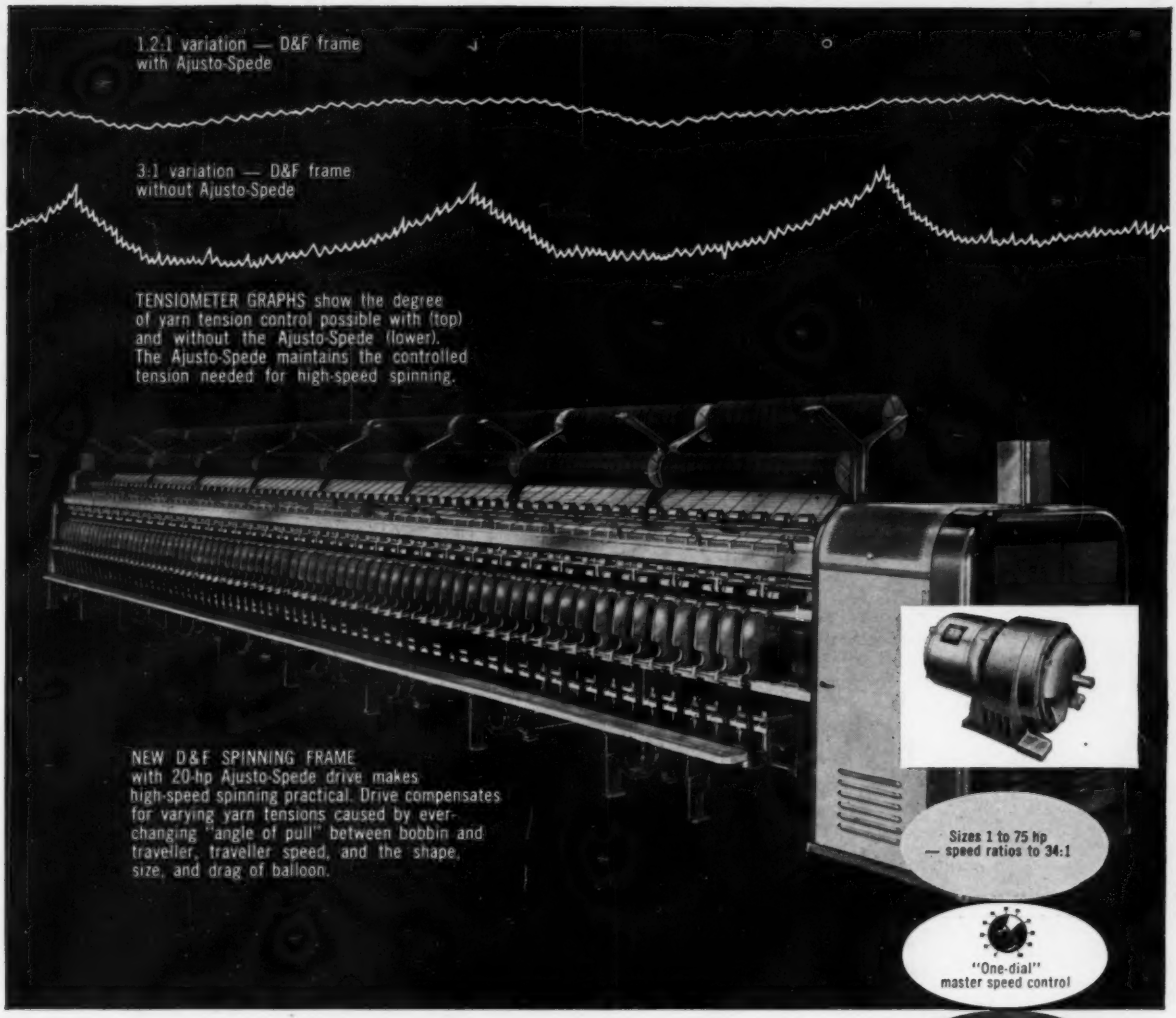
Dr. Harley Y. Jennings, who is currently teaching textile chemistry at North Carolina State College's School of Textiles, has received an honorary membership in Eta chapter of Phi Psi textile fraternity. • • • **Dr. Malcolm E. Campbell,** dean of the School of Textiles, has been appointed to a 12-man committee of the National Academy of Sciences, National Research Council, to advise the U. S. Government in the task of launching an expanded program of research for the nation's textile industry. **J. Spencer Love,** president of Burlington Industries, Inc., and former Secretary of the Army **Robert T. Stevens,** of J. P. Stevens and Co., Inc., are also members of the committee.

Richard R. Higgins, president of The Kendall Co., **J. Spencer Love,** chairman of the board and president of Burlington Industries, Inc., and **Fred M. Lyon,** president and treasurer of Micolas Cotton Mills, Inc., have been named to fill unexpired terms on the board of directors of the American Cotton Manufacturers Institute.

Frederick R. Westcott, chairman of the board of directors of Cabin Crafts, Inc., Dalton, Ga., has been

Continued on page 38

For further information use Handy Return Card, Page 175


1.2:1 variation — D&F frame with Ajusto-Spede
3:1 variation — D&F frame without Ajusto-Spede
TENSIOMETER GRAPHS show the degree of yarn tension control possible with (top) and without the Ajusto-Spede (lower). The Ajusto-Spede maintains the controlled tension needed for high-speed spinning.
NEW D&F SPINNING FRAME with 20-hp Ajusto-Spede drive makes high-speed spinning practical. Drive compensates for varying yarn tensions caused by ever-changing "angle of pull" between bobbin and traveller, traveller speed, and the shape, size, and drag of balloon.
Sizes 1 to 75 hp — speed ratios to 34:1
"One-dial" master speed control

Keeps yarn tension constant... ups output at least 20%!

Louis Allis Ajusto-Spede® drive on Davis & Furber spinning frame minimizes "ends down"...cuts costs...improves quality of yarn!

The smooth, precise control of yarn tension by the electronically-controlled Louis Allis Ajusto-Spede drive permits high-speed spinning of wool yarn. The big gain in production achieved by the new Davis & Furber spinning frame proves it!

In-the-mill production records show that uniform yarn tension brings the following benefits:

1. More yards and pounds of yarn per spindle hour.
2. More uniform yarn density and build of bobbin.
3. Fewer "ends down" and less downtime.
4. Lower per-pound production cost.
5. Production increases of 20% and more!

The Ajusto-Spede can be used as a standard adjustable-speed drive — or it can be used to cycle the speed of the frame to keep yarn tension constant. It enables you to select optimum speeds for spinning any grade of wool. Fewer "ends down" allows more free time for the operator to tend additional frames. The operator can easily adjust the controls to provide the optimum speed for the particular grade of wool, and the Ajusto-Spede *responds smoothly and automatically!*

Our drive specialists can help you increase production — to improve the quality of your spinning, as well as all other textile operations. Call your nearby Louis Allis District Office for application help — or write The Louis Allis Co., 468 E. Stewart St., Milwaukee 1, Wisconsin.

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AS-108

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE-SPEED DRIVES

H. P. Talbert, Jr., Overseer of Spinning at Boger and Crawford Spinning Mills, Lincolnton, North Carolina, checks yarn quality with Wayne Downs, Armstrong representative. Accotex NC-727 roll covers are used on both the front and back rolls of this spinning frame. It is also equipped with NO-7075 aprons.

Your Armstrong man can help you get higher production, better yarn

Here's a combination you can count on to help you turn out yarn that's strong, smooth, uniform: your Armstrong man, and the wide range of materials available in the Accotex line of cots and aprons.

To keep yarn quality high, hundreds of mill men have standardized on Accotex products. These men know that Accotex materials offer the superior fiber control and smooth drafting action that mean high-quality yarn.

These men also know they can count on their Armstrong man for dependable suggestions on roll covering and apron problems. At Boger and Crawford Spinning Mills, for example, the Armstrong man is Wayne Downs, shown here working with mill personnel.

Be sure to call *your* Armstrong man on any roll covering or apron problem. Armstrong Cork Company, 6412 Ivy Street, Lancaster, Pennsylvania.

ACCOTEX® IS A TRADEMARK OF ARMSTRONG CORK COMPANY.

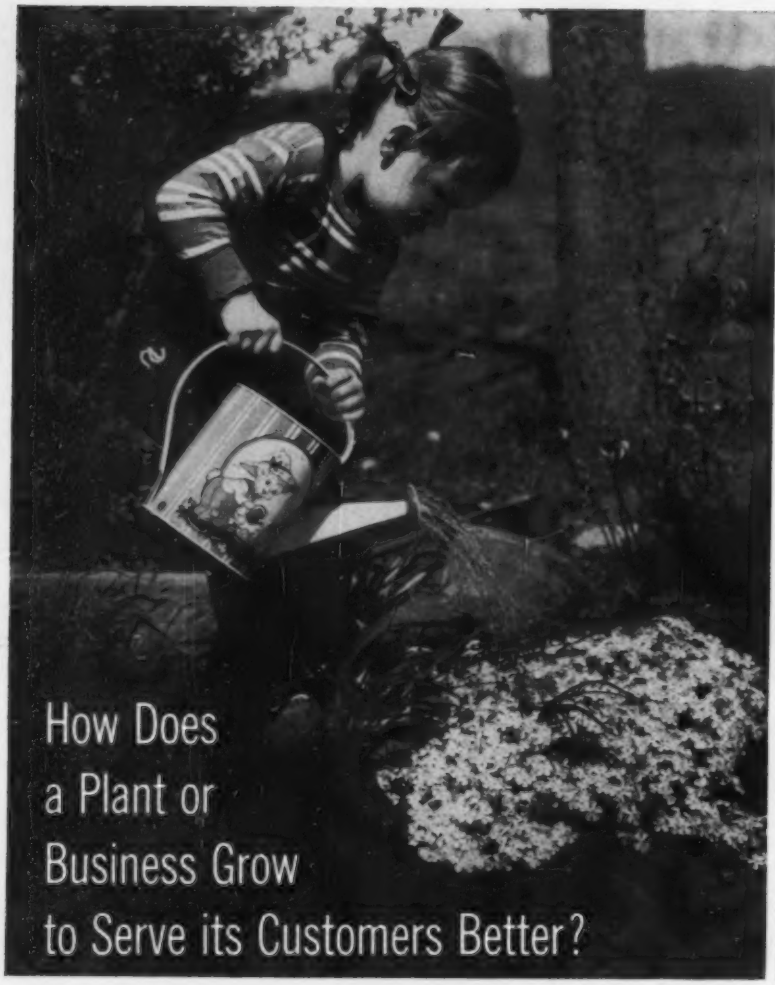
W. H. Martin, Overseer of Carding, and Wayne Downs inspect a roving frame, which has Accotex NC-727 roll covers on all four lines.

In the roll shop, Wayne chats with Noel C. Weaver, Foreman, about the importance of good roll maintenance.

J. L. Wright (at right), Superintendent, and D. C. Rudisill (left), Asst. Superintendent, learn about a new Accotex apron from Wayne Downs.

Armstrong

ACCOTEX COTS AND APRONS



Most businesses are highly competitive. Ours is no exception. Yours probably isn't, either. How then—in face of stiff competition—does a business grow, expand its facilities, products, and services?

There is only one answer, based on our experience, which has led to steady growth and development during the past few years: *dedication.*

Dedication to product quality. Dedication to service. Dedication to meeting customer requirements.

Today TPP serves you from 5 strategically located plants, each capable of producing a complete range of tubes and cores of the finest quality.

If you are looking for a dependable source of tubes or cores, it will pay you to talk with us.

TPP TEXTILE PAPER PRODUCTS inc.

Specialists in tubes and cores for textile and paper industries

CEDARTOWN, GEORGIA Home Office and Plant
Other Plants In: Carlyle, Illinois — Crossett, Arkansas
Jacksonville, Florida — Mobile, Alabama

PERSONAL NOTES

(from page 34)

elected chairman of the board of trustees of the American Carpet Institute.

Burke M. McConnell has been named vice-president in charge of man-made fibers purchasing for Burlington Industries, Inc. Mr. McConnell's office will be located in the firm's sales headquarters in New York City.

T. C. Smotherman, formerly vice-president in charge of sales and a director of American & Efird Mills, has resigned to accept the position of vice-president and director of Kimberly Yarn Mills, Mount Holly, N. C.

Keith Walden has been named president of Cotton Council International. Mr. Walden succeeds the late A. E. Hohenberg.

J. E. Neighbors has been named superintendent of the Tifton, Ga., woolen mill recently purchased from Burlington Industries, Inc., by J. P. Stevens & Co., Inc.

Rudd Hardesty, vice-president in charge of manufacturing for Chadbourn Gotham, Inc., Charlotte, N. C., has retired. **Frank Bobo** has been named to succeed Mr. Hardesty.

Billy Burke, editor of *Finishing Lines,* the employee newspaper of North Carolina Finishing Co., was recently elected president of the South Atlantic Council of Industrial Editors.

Harold Keels, formerly head bleacher at North Carolina Finishing Co., has been named superintendent of dyeing at American Finishing Co., Memphis, Tenn. **Leon Tigler** has assumed duties as assistant director of research.

Earle J. Vining has been named secretary-treasurer of Domil, Ltd., subsidiary of Dominion Textile Co., Ltd., Montreal, Canada, succeeding the late George Murray.

Watson Ten Eick, Jr., of Diehl Manufacturing Co., Pickens, S. C., has been named president of the newly-formed South Carolina chapter of American Institute of Industrial Engineers. Other officers elected were: vice-president—**Wesley H. Suit;** secretary— **Tom Neal, Jr.;** treasurer—**John Pirich,** all with Ex-

For further information use Handy Return Card, Page 175

General Electric Makes Eddy-current-coupling Drives

And they're dependable drives. The complete line includes water-cooled and air-cooled eddy-current couplings. We call them KINATROL* drives. Ratings are from 1 to 150 horsepower, operating from standard a-c power.

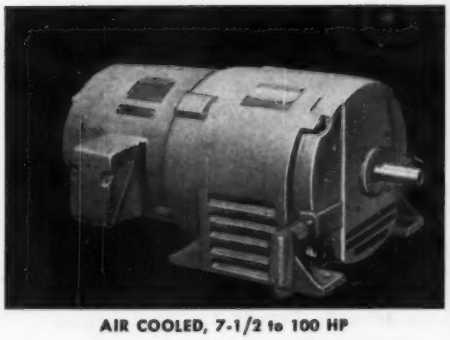
A General Electric KINATROL drive is not just another eddy-current coupling. For instance, in the water-cooled coupling, water control is packaged. You'll see much less external piping. Furthermore, the coupling is protected from flooding—and the air gaps are dry, preventing corrosion.

KINATROL couplings are compact, field proven and dependable. General Electric has had a good deal of experience in the engineering, manufacturing, and application of packaged adjustable-speed drives. And we know how important service is to a customer.

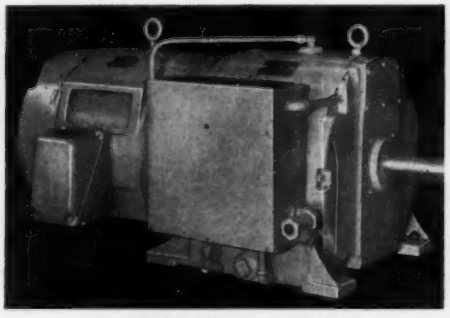
KINATROL —a good product, with the kind of service you can depend on. Please call your nearest General Electric Sales Office for further details.

*Trademark of General Electric Company

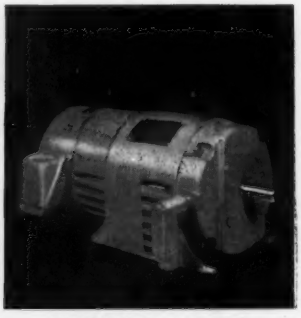
821-07



AIR COOLED, 7-1/2 to 100 HP



WATER COOLED, 25 to 150 HP

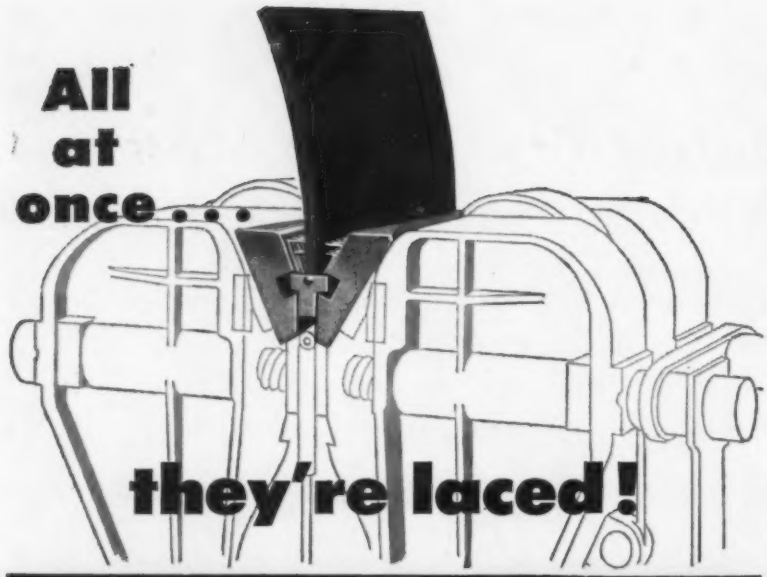


AIR COOLED, 1 to 5 HP

DIRECT CURRENT MOTOR AND GENERATOR DEPARTMENT

GENERAL ELECTRIC

ERIE, PENNSYLVANIA



with Clipper

HOOKS and LACERS

You can lace belts up to 12 inches wide all in one operation with Clipper Belt Hooks and Lacers. Until the Clipper hooks shown above were inserted into the jaws of the lacer, they were protected and held in place by a reinforced card that is easily stripped away once the hooks are in the lacer. The lacer jaws, exerting up to 45,000 lbs. of pressure, imbed the hooks firmly and uniformly across the width of the belt. And in the belt, each hook is separate from the others to give flexibility not possible with other methods of belt lacing. For unmatched speed, strength and flexibility, depend on the proved Clipper machine-lacing method.

FOR MORE INFORMATION

Detailed product information and case history examples of Clipper machine-lacing benefits are contained in Bulletin No. 157. Send for your free copy today.

Ask your Industrial Distributor for Clipper Products

Clipper BELT LACER COMPANY

980 Front Ave., N. W., Grand Rapids 2, Michigan

PERSONAL NOTES

(from page 38)

celsior Finishing Plant, Pendleton, S. C.

James H. Campbell has been given the title of executive vice-president of the Combed Yarn Spinners Association, and **Mrs. Margaret Greene** has been given the title of executive secretary.

James Leonard Evers has been transferred from the Conover (Ala.) division of Riegel Textile Corp., to the engineering department at Ware Shoals, S. C.

Herbert S. Tucker has been appointed secretary-treasurer of the Duplan Corp. Mr. Tucker will be in the company's main office in Winston-Salem, N. C.

Wendell W. Hair has been promoted to the position of assistant head of the industrial engineering department for Joanna (S. C.) Cotton Mills Co.

Dr. Milton M. Platt was recently awarded the first Fiber Society Award for "distinguished achievement in basic or applied fiber science." Dr. Platt, vice-president and

associate director of Fabric Research Laboratories, Inc., was cited for his many contributions to fiber technology, particularly in better understanding of fabric engineering.

Robert N. Stokes, assistant treasurer of Burlington Industries, Inc., has retired. • • • **John L. Mortimer** has been named president of the newly-formed Burlington Automotive Fabrics Co.

John T. Threatt has been named superintendent of Erwin Mills' No. 1 mill in Durham, N. C., succeeding **T. Clayton Pegram,** who has retired.

John W. Marshall has been named overseer of the print works' aging and soaping department at the Carlisle (S. C.) plant of Cone Mills

Continued on page 178

STROBOTAC

...indispensable for quality control and preventive maintenance

INTENSE, WHITE LIGHT of extremely short flash duration freezes motion and shows clearly operational details of looms, knitters, spinning frames, spoolers, and wool combers.

LONG-THROW BEAM reaches into the heart of equipment; speeds spinning frame checks; enables you to see clearly moving objects under normal mill lighting conditions.

Type 1531-A STROBOTAC®
Electronic Tachometer and Motion Analyzer . . . only $260

SPEED RANGE
to 25,000 rpm; useful to 250,000 rpm; lower limit is 110 rpm.

1% ACCURACY

LIGHT WEIGHT—only 7⅛ lb.; convenient neck strap is supplied for carrying ease.

Write for Complete Information

GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS

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MILL NOTES

The throwing operations of **Liberty Throwing Co.**, Kingston, Pa., have been discontinued and the 37,000 sq ft of space has been turned over to the production of elastic thread. Employment is expected to be increased under the new program.

Production facilities at the Gastonia, N. C., cotton yarn plant of **United States Rubber Co.** will be increased 35 per cent within a year. The expansion is being made to keep pace with the growing demand for Vyrene, the company's new synthetic elastic thread. * * * A $1 million modernization and expansion program has been announced for the Stark Mills in Hogansville, Ga. Up-to-date equipment will be installed to produce highest quality cotton tufting yarns for the trade.

A 17,000 sq ft addition is being completed at **H. & F. Binch, Inc.**, Glen Falls, N. Y., subsidiary of Native Laces & Textiles, Inc. Erected at a cost of over $125,000, the new facility will increase efficiency within the plant and serve to expedite the flow of work from grey to finished goods. Enlarged dyeing facilities will enable the firm to continue its experimentation in color, incorporating the newest dyestuffs and techniques, and will further assure customers of complete color coordination between tricot fabrics and laces.

Habersham Mills, Cornelia, Ga., has completed a $400,000 air conditioning program.

The Cornelius, N. C., mill, formerly owned and now occupied by the Curon division of **Reeves Bros., Inc.**, has been purchased by the Southern Baptist Convention, which in turn has leased the facility back to Reeves Bros.

William Barrell Co., Inc., Atlanta, Ga., has announced the acquisition of the **Glendale Mill** of Indian Head Mills, located near Spartanburg, S. C. Plans for the future of the mill are not definite.

A new yarn mill, owned by the Industrial Development Board and leased to **Riverview Mills, Inc.**, has begun test processes in Geneva, Ala. The plant will begin production in the near future and employ approximately 50 people.

A private telephone network has been installed for the **Deering Milliken, Inc.** chain of mills. The system is composed of dial telephone circuits which permits direct dialing to offices in distant cities through the use of local telephones.

In commemoration of their 50th anniversary, **Bradford Dyeing Association, U. S. A.**, of Westerly, R. I., and New York received a plaque from the state of Rhode Island for their long and outstanding service and contribution to the textile industry. The plaque carried the signatures of Governor Notte and Senator Pastore.

The New Holland, Ga., plant of

Continued on page 52

The SECOND BEST way to spin wool-*profitably*

Whitin Wool Spinning *Conversions*

The best way to spin woolen yarn is common knowledge — the new Whitin FLEX-SPIN Spinning Frame.

But we're realistic. We know hundreds of Whitin Model E Wool Spinning Frames are now in operation. While still sound and sturdy, many are the victims of progress, being out-performed by today's technical improvements and unable to keep pace with today's high-speed operations.

Here's where a Whitin Conversion can work wonders — a real "booster shot" for lagging production.

Basically, three major improvements are involved:

- **Traverses are increased from 11" to 16" by means of a reciprocating motion and the addition of balloon control rings. This results in the production of packages carrying 50% to 100% more yarn.**
- **New antifriction spindles and brakes are installed, permitting an increase in operating speeds up to 20%.**
- **Balancing cylinder drive is eliminated for improved cleanliness and lower maintenance.**

FLEX-SPIN Wool Spinning Frame

While additional remedial steps may also be taken, (other Whitin accessories), these three usually put stragglers back into competitive operation at a cost so low it will amaze you. Don't be content with yesterday's performance for tomorrow's market — call your Whitin representative today.

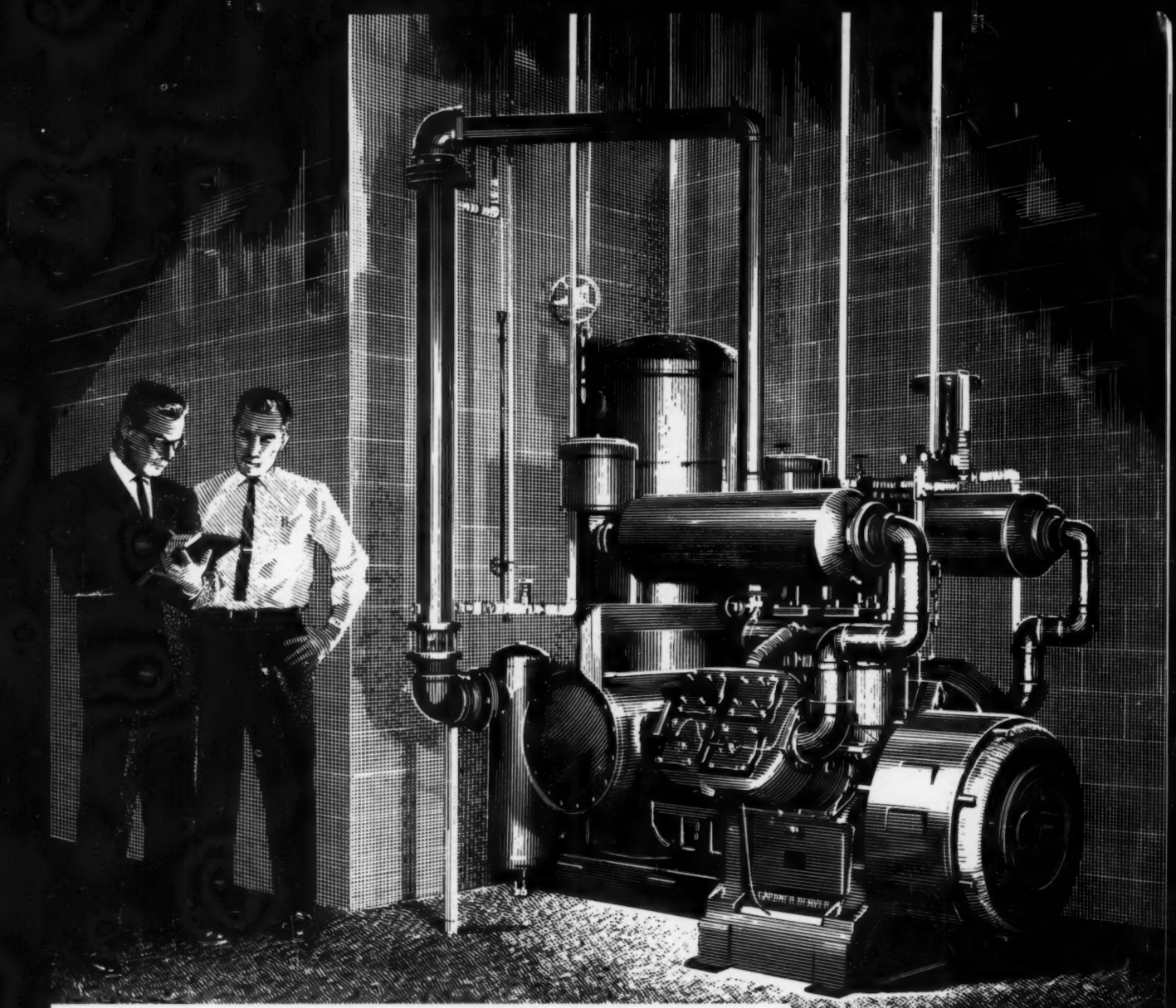
WHITIN

Machine Works • WHITINSVILLE • MASS.

CHARLOTTE, N.C. • GREENSBORO, N.C. • ATLANTA, GA. • SPARTANBURG, S.C.

The best way to better yarns

For further information use Handy Return Card, Page 175



"We pocket the difference"

The difference? Saving in floor space. No foundation cost. Quick and easy installation. The Gardner-Denver packaged air compressor goes right to work . . . provides a dependable supply of air for years. Want details? Request Bulletin WB-10. Gardner-Denver Company, Quincy, Illinois.

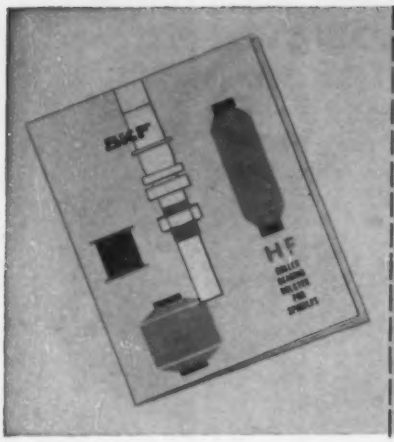
Sales & Service Offices:

Atlanta, Ga.; Birmingham, Ala.; Knoxville, Tenn.; Washington, D. C.; Teterboro, N. J. (New York Office); Philadelphia, Pa.; Pittsburgh, Pa.; New Orleans, La.; Louisville, Ky.; Richmond, Va.; Needham Heights (Boston, Mass.); Jackson, Miss.; Lafayette, La.

GARDNER-DENVER Since 1859

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

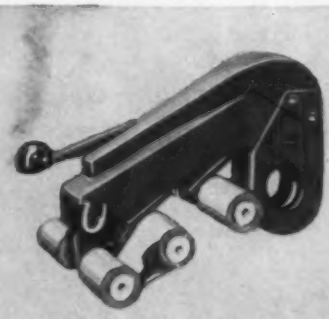
GARDNER - DENVER

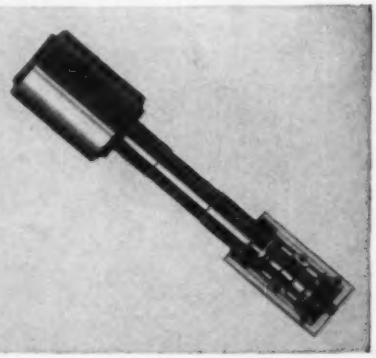


NEW SKF ROLLER BEARING BOLSTERS offer smooth acceleration, vibration-free operation and precision plumbing. Two models available—Type HF for heavy package, high-speed spinning, Type HZ for heavy-duty twister spindles.

NEW PK SERIES PENDULUM WEIGHTING ARM for spinning cotton, synthetic, woolen and worsted yarns under today's heavy drafting pressures. SKF-developed feature provides automatic alignment throughout drafting.

NEW DRAFTRITE® ROLLER BEARING TOP ROLL assures evenness of yarns, under heavy drafting pressures, and reduces chance of ends down. Two types available—one for lateral guidance, one for center suspension drafting. 6028





SKF backs up its new textile specialties with complete product data

What's the maximum permissible load for the new Draftrite top rolls? Can the new PK pendulum weighting arms be loaded and unloaded individually? What's the recommended break-in period for those new HF and HZ roller bearing bolsters?

To answer these questions—and many others—SKF offers a comprehensive booklet on each of its new textile specialties.

These data books are complete. Each contains facts and figures, photos and diagrams of the product's design, features, installation and maintenance.

References like these are indispensable when you're considering new equipment, modernizing machinery or simply replacing worn-out parts. Because with them, you can go right ahead with your plans —with all the pertinent facts on hand. Of course, an SKF textile specialist is always available for consultation.

To get copies of these valuable time-savers, just

CALL OR WRITE SKF TEXTILE SALES OFFICE

Front Street and Erie Avenue
Philadelphia 32, Pa.
GArfield 6-9620

2935 South Griffith St.
P.O. Box 3031, Charlotte 3, N. C.
JAckson 3-6232

P.S. Ask, too, for complete data on SKF Type "SR" Tension Pulleys. They eliminate tape jump-offs, ensure uniform spindle speeds and permanent pulley adjustments. And they only need re-greasing after 20,000 working hours—about once every 3 to 5 years!

SKF MOTION ENGINEERING

Advanced ball and roller bearing technology

For further information use Handy Return Card, Page 175

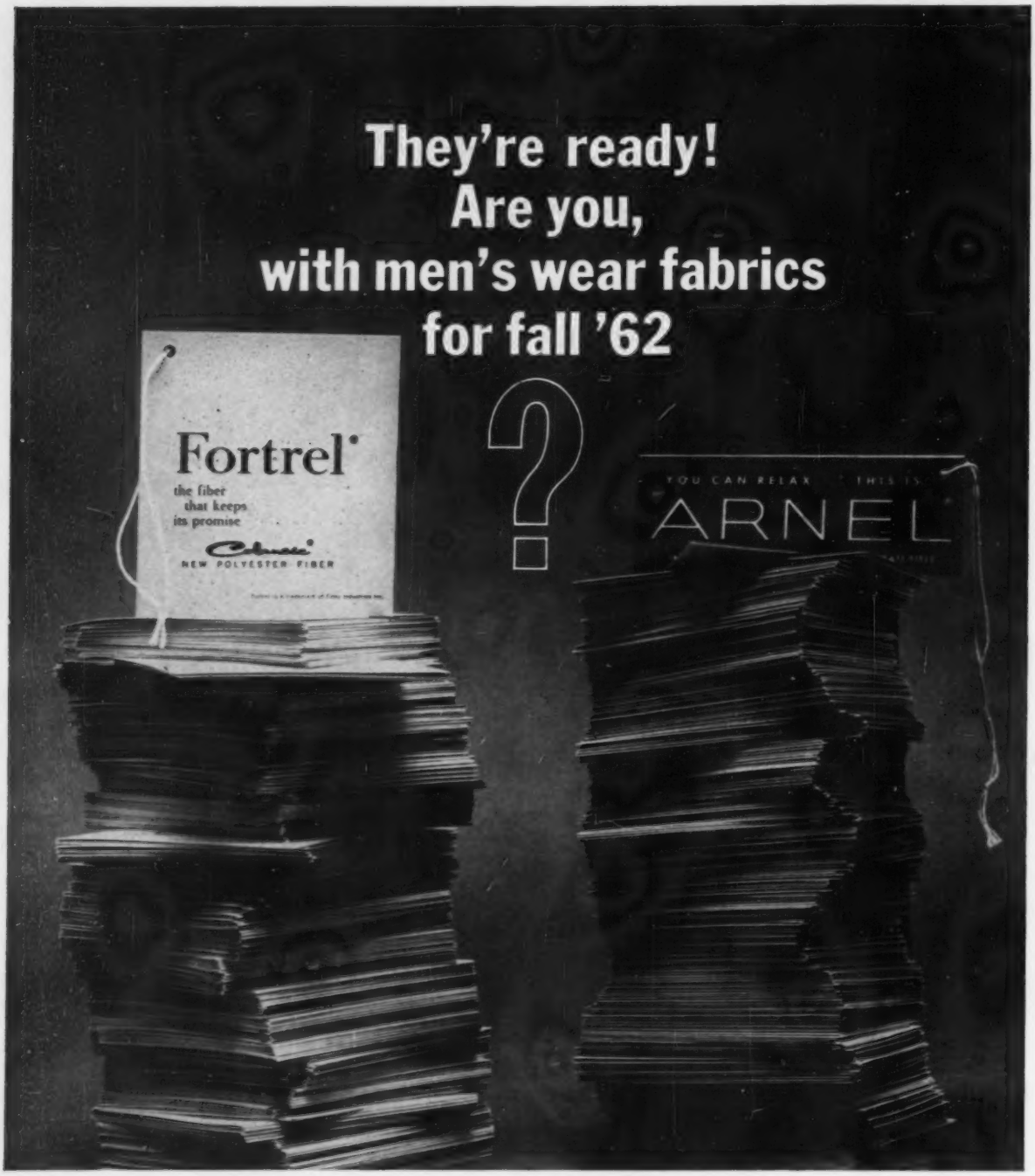
You get all 3 when you specify Victor Ring Travelers

Quality comes first in most people's minds. In the case of ring travelers, quality means precision. **And precision means Victor Ring Travelers.** From the standpoint of metallurgy, size, shape, and polish, they're made right—and that rightness shows in production figures. But quality doesn't count unless you know you can get what you need when you need it. Again, Victor comes through. You enjoy same-day service on all stocked sizes and styles...exceptional speed of delivery on special orders, too. What about cost? Victor Ring Travelers are your most economical buy. Little wonder: like all Saco-Lowell parts, they're **built for better performance...backed by better service.**

SACO-LOWELL SHOPS

REPLACEMENT PARTS DIVISION

EXECUTIVE OFFICES: DRAWER 327, GREENVILLE, S.C.
SALES OFFICES: ATLANTA, GA.—805 PEACHTREE ST., N.E.
GREENVILLE, S.C.—P.O. Box 1698; CHARLOTTE, N.C.—P.O. Box 149;
GREENSBORO, N.C.—601 N. Elm St. Bldg.; SACO, MAINE—P.O. Box 230



With your menswear customers—and their customers—these hang-tags are unmistakable symbols of outstanding quality. Converters, cutters and consumers alike have learned that *Fortrel polyester* and *Arnel triacetate* are positive assurance of lasting good looks with easy care. They bank on these famous Celanese fibers for minimum wrinkles and muss, maximum crease-retention—plus the simplest sort of upkeep.

This broad acceptance is no accident. Celanese backs these great fibers with great promotions. Powerful national advertising—together with all-out merchandising aid—constantly keep Fortrel and Arnel in the public eye. Retailers will be looking for Fortrel and Arnel tagged merchandise next fall . . . be sure these important fibers are in your lines! Celanese Fibers Co., 522 Fifth Avenue, N. Y. 36 (a division of Celanese Corporation of America).

Celanese® Arnel® Fortrel® is a trademark of Fiber Industries, Inc.

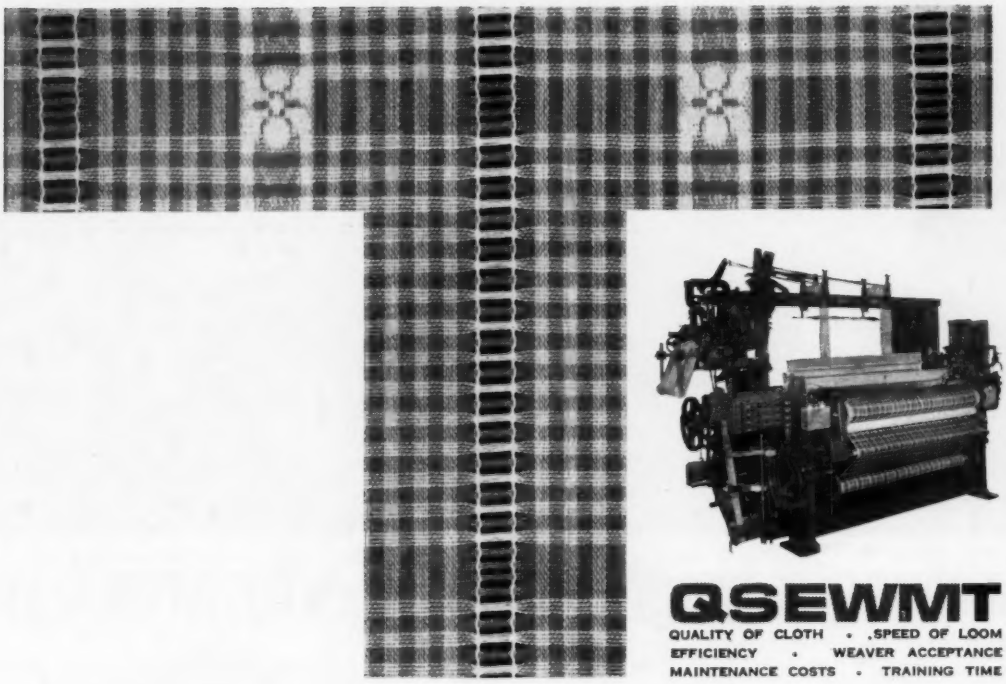
Celanese contemporary fibers

For further information use Handy Return Card, Page 175

TRAINING TIME for C&K's C-7 Loom is measurably shortened by the substitution of mechanical advantages for weavers' skills. Improvements engineered into the loom, such as electric controls, automatically do much of the thinking for the operator, and a sense of timing is not as essential.

Reduced skill requirements not only release trainees to work sooner but also enable more women to become weavers. Even inexperienced weavers can operate the loom safely at high speeds without difficulty. The resultant benefits are quicker proficiency and an increase in *average* workers' productivity.

The C-7 Loom is designed to produce more first quality cloth at higher efficiency and with less maintenance and labor costs. Crompton & Knowles has prepared a folder exploring each of the elements in this series. Send for it to see why the loom line that weaves the widest variety of fabrics ever—fancy cottons, synthetics, terry towels, ginghams, and dress goods—has big *advantages for your mill.*



QSEWMT

QUALITY OF CLOTH • SPEED OF LOOM
EFFICIENCY • WEAVER ACCEPTANCE
MAINTENANCE COSTS • TRAINING TIME

CROMPTON & KNOWLES CORPORATION

WORCESTER, MASSACHUSETTS

C&K

WORLD LEADERSHIP IN AUTOMATIC BOX LOOMS–RESEARCH–ENGINEERING–MANUFACTURE

CHARLOTTE, N. C. / ALLENTOWN, PA. / CROMPTON & KNOWLES JACQUARD & SUPPLY CO. PAWTUCKET, R.I. / CROMPTON & KNOWLES OF CANADA, LTD., MONTREAL, QUEBEC

He's using a tougher yarn . . . why aren't you?

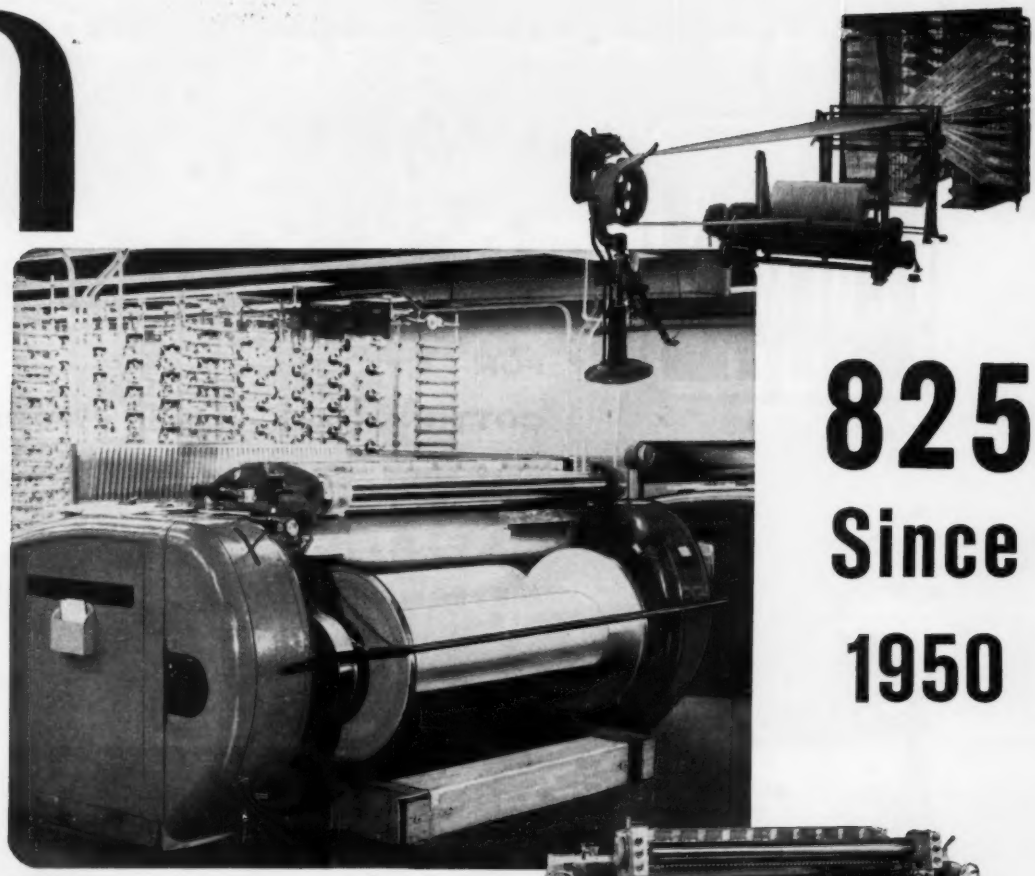
It takes a tough yarn to help a tarpaulin stand up to all kinds of weather. And tough is the word for high-tenacity Golden Caprolan® nylon by Allied Chemical. But Golden Caprolan is more than just tough. It is a remarkably versatile yarn that offers a unique combination of superior performance qualities. Unsurpassed resistance to abrasion, excellent rubber adhesion, greater resistance to flex-fatigue, to name a few. Golden Caprolan established a new standard of strength for marine rope and a new criterion for heat stability in nylon tire cord. Golden Caprolan is also performing superbly in conveyor belts, industrial webbings and dozens of other applications where heavy-duty performance is essential. If you have a tough job, we have the tough yarn for it. Our technical service staffs are ready today to help you.

Allied Chemical

Fiber Marketing Dept., 261 Madison Ave., N.Y. 16

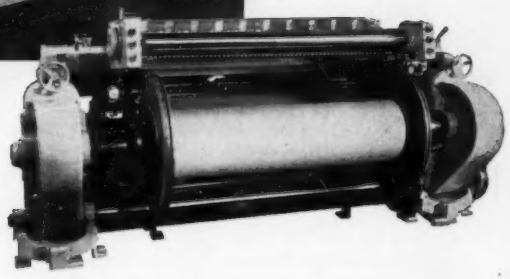
GOLDEN caprolan NYLON FOR THE 60's

For further information use Handy Return Card, Page 175



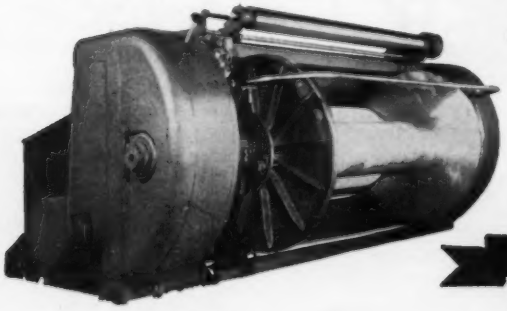
Cocker

825 Since 1950



. . . has installed over 825 warpers since 1950—approximately three times the volume of the next leading make. Speed, flexibility, economy, and many valuable exclusive features account for this outstanding popularity—from finest deniers to heaviest tire cord yarns.

Accurately maintained air operated pressure produces beams of any desired density, from hardest beams for extra hours of weaving to soft beams for perfect dye penetration. Speed and braking are rheostat controlled from both ends to provide smooth operation and instant stops at all speeds. Horizontal traverse on combs prevent channeling. Other features, such as air doffing, predetermining counter clocks, and electric speed indicators are standard on most models. Heavy construction practically eliminates vibration.



Whatever your warping requirements may be, there is a Cocker Machine which will do the job faster and better. Let us give you full information on the type you need.

THE LEADER COCKER AROUND THE WORLD

Machine and Foundry Co., Gastonia, N. C.

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

USED IN TEXTILE MILLS AROUND THE WORLD

BARBER COLMAN

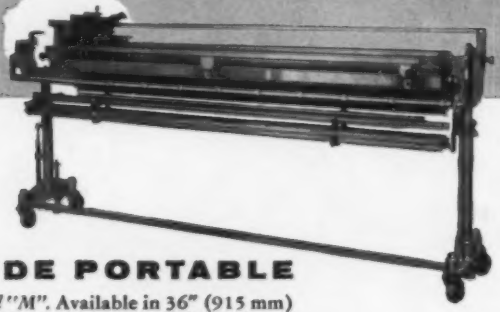
WARP TYING MACHINES

FOR

COTTON • WOOL • LINEN • WORSTED

MOHAIR • SILK • SYNTHETICS

SUITABLE MODELS FOR ALL CONDITIONS



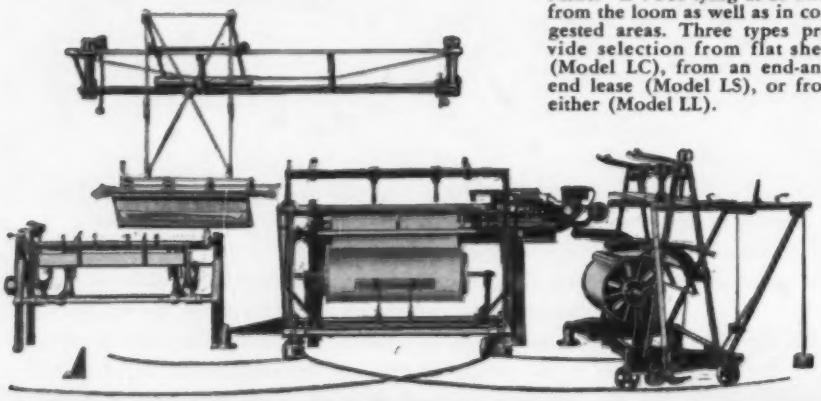
WIDE PORTABLE

Model "M". Available in 36" (915 mm) through 126" (3200 mm) maximum warp width capacity. Multiple frames permit advance loading. Three types provide different methods of selection.

ALL MODELS OPERATE UP TO 325 KNOTS PER MINUTE CONTROLLED BY VARIABLE SPEED MOTOR DRIVE

15" (380 MM) PORTABLE

Model "L". For tying at or away from the loom as well as in congested areas. Three types provide selection from flat sheet (Model LC), from an end-and-end lease (Model LS), or from either (Model LL).



STATIONARY

Model "EL". Designed for use in mills that concentrate on simple weaves. Available in 46"(1170 mm) through 116" (2950 mm) maximum warp width capacity. Tying ahead saves substantial down time at the loom. Selects from flat sheet only. For cotton and spun yarns.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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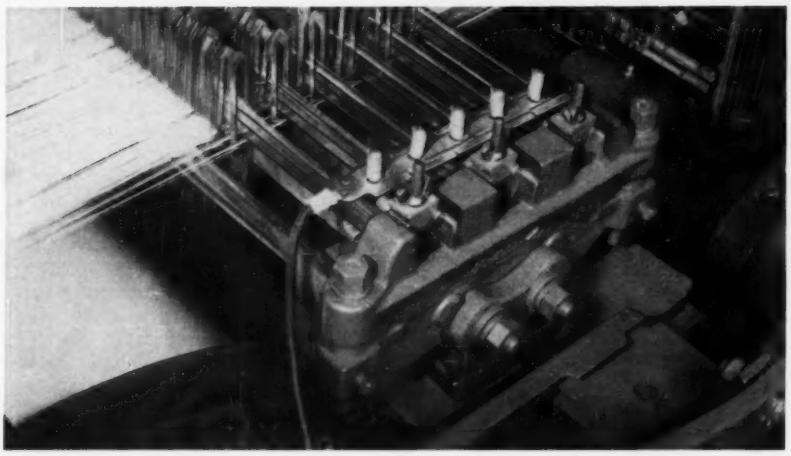
For further information use Handy Return Card, Page 175

DRAPER BRIEFS
NEWS OF INTEREST IN WEAVING

THE #130 K-A® UNIVERSAL WARP STOP (ADJUSTABLE)



A greater range of adjustments and interchangeable lengthwise parts permit better weaving in a wide range of fabrics.

The #130 K-A Warp Stop combines the best features of former electrical and mechanical warp stop motions with new provisions for adjustment and adaptability to various weaves. Regularly furnished with 6 banks (1-5/32" spacing), this versatile Warp Stop can be used as a 4-bank construction by omitting two Electrodes. Round Center Rods (Center Warp Supports) are regularly furnished but, at mill's request, flat Center Rods can be supplied.

Adjustable features

The #130 K-A Universal Warp Stop incorporates the following provisions for adjustment to secure the most favorable settings for quality cloth production:

1. Angular tilting adjustment to facilitate attaining proper warp line support.
2. Adjustment of Electrode height above warp support for wider shed openings to overcome Electrode wear caused by drop wires striking bottom of Electrode.
3. Adjustable height of Center Rods.

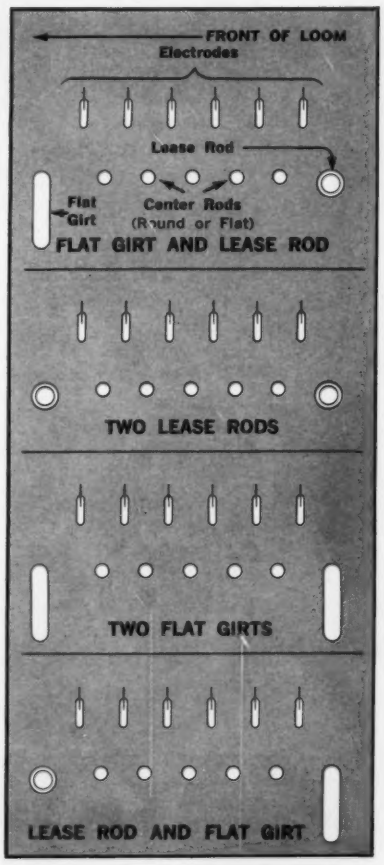
Interchangeable lengthwise parts give versatility

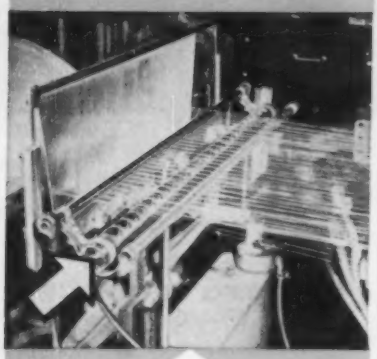
Interchangeable positioning of Flat Girts and Lease Rods make this warp stop adaptable to a wide range of cottons, silk or rayon type fabrics, or heavy weaves. Possible assemblies include:

1. COTTON TYPE – Flat Girt and Lease Rod with Fibre Bridge and Center Support.
2. HEAVY FABRICS (wide loom) – Flat Girt and Lease Rod with Drop Wire Bar Brace (Brass) to rigidly support back of Warp Stop at Lease Rod. Also available are an Electrode Hold-down and a Center Electrode Support for higher positioning of Electrodes.
3. HEAVY CONSTRUCTION – Two Flat Girts (box plate arrangement) with Drop Wire Bar Brace (Brass).
4. SILK, FINE COTTON, OR RAYON TYPE – Two Lease Rods with Fibre Bridge and Center Support.

Lengthwise parts are interchangeable: either two Lease Rods or two Flat Girts can be used; or a Flat Girt can be assembled at either front or back, with Lease Rod opposite.

The Warp Stop can be reversed without difficulty after warp has been installed. Simply detach Flat Girt and Lease Rod Clamps, remove from beneath the warp line, and reassemble in interchanged positions.





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920 Walnut Street, Lansdale, Pa.

MILL NOTES

(from page 42)

Pacolet Manufacturing Co. recently amassed one million man-hours without a loss-time accident.

A new firm, **Normandie Yarn Mills, Inc.,** has been formed in Philadelphia, Pa. The firm manufactures novelty yarns for the knitting and weaving trades. Nathan Zucker is president of the mill.

J. & S. Hosiery Mill, Hickory, N. C., has announced an expansion program which will double production capacity. A 4,000 sq ft addition will be constructed and approximately 100 new circular knitting machines will be installed for the production of crew socks.

United States Rubber Co. has announced a $1.1 million expansion and modernization program of cotton yarn manufacturing facilities in its Winnsboro (S. C.) plant. * * * Nylon and rayon tire cord production has been automated at the Shelbyville (Tenn.) plant. A 224-spindle unit of the Clarkson cord former has been placed in operation, which winds and forms either nylon or rayon tire cord in a single operation.

The Jonell Corp. has started operations in their new location in Bridgeton, R. I. Last year the company purchased the 50,000 sq ft building and has installed additional equipment to better accommodate the bleaching, dyeing, and finishing operations.

Allison Mills, Inc., Chattanooga, Tenn., is producing tufted blankets of Creslan. The blankets will be introduced in nine different colors. Newell S. Allison recently resigned from Jolly Textiles, Dalton, Ga., to form the new operation.

Guadalupe Valley Cotton Mills, Cuero, Texas, has been purchased by Otto Goedecke.

Lamatronics Industries, Inc., has moved its operations from New York City to 8 Prospect St., Amsterdam, N. Y.

The Lumberton, N. C., mill of **Calvine Mills, Inc.,** has been destroyed by fire. The facility will be rebuilt. * * * The firm has purchased two large buildings for the construction of a new mill in Swainsboro, Ga. The new installation is expected to double the firm's production capacity.

Allied Textile Printers, Inc., Paterson, N. J., has ceased operations at **Standard Dyeing & Finishing Co.** The firm will concentrate on textile printing. Plans have not been announced for the disposition of the buildings or equipment involved in the dye operations.

Textilfoam, Inc., has opened a new laminating plant in Clifton, N. J. The 90,000 sq ft facility has the capacity to turn out 70,000 yards of fabric per day.

The Rossville, Ga., unit of Peerless Woolen Mills, a subsidiary of **Burlington Industries, Inc.,** is being liquidated and the plant will be closed December 31. * * * Operations of the Dublin (Va.) Finishing Co. will be transferred from the parent company's Burlington Finishing Co. division to its Klopman Mills division. Klopman Mills will continue Dublin Finishing Co. as a commission plant and will carry out all commitments made by the previous management. * * * Weaving operations at the Kernersville (N. C.) plant have been discontinued. The operations will be consolidated at other nearby Burlington plants.

The new $1 million addition of **Aberfoyle Manufacturing Co.,** Belmont, N. C., is operating on a pilot basis. Full production is expected by the first of the year. When new equipment has been installed, all of the company's dyeing activities will be centered in Belmont.

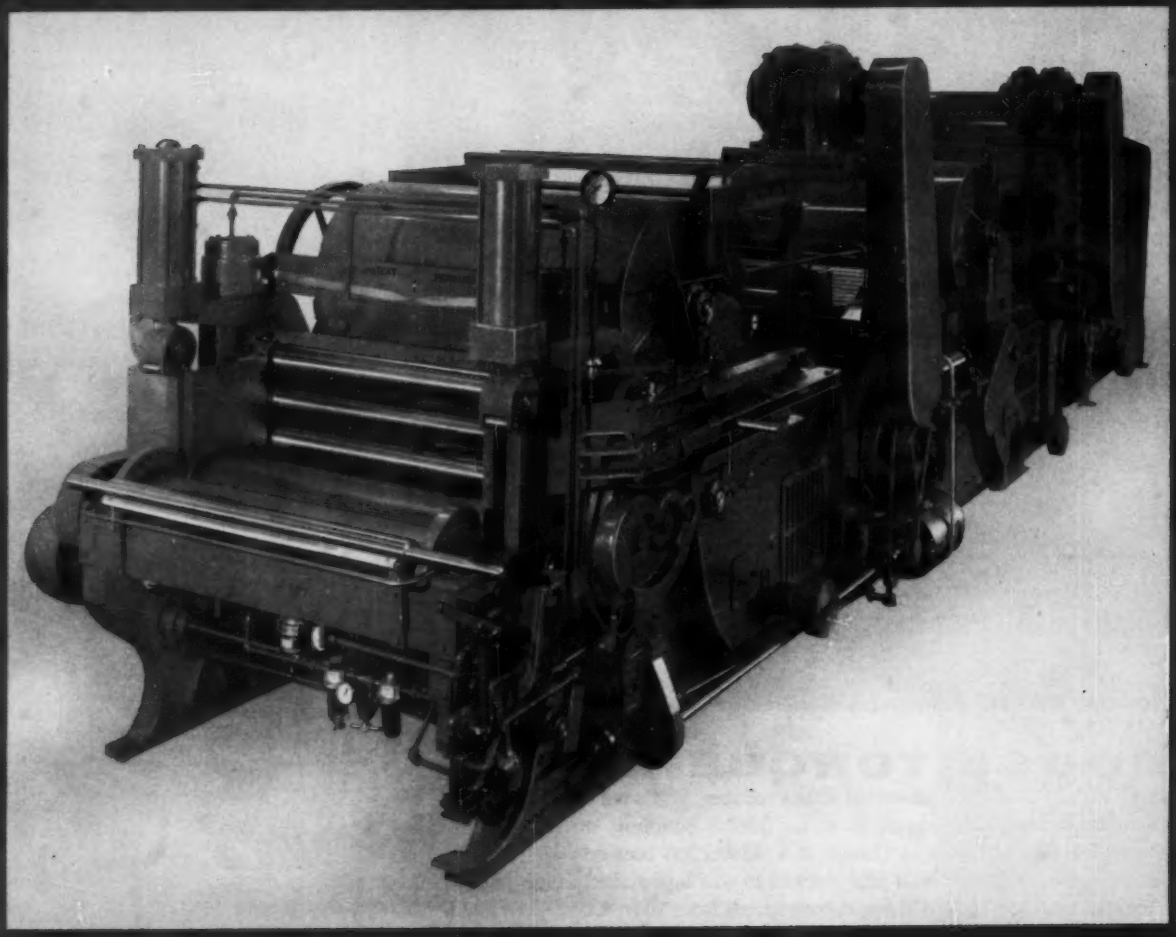
Alamac Knitting Mills, Inc., Indian Orchard, Mass., has announced plans for the construction of a 158,000 sq ft plant at Lumberton, N. C. The firm will produce knitted fabrics for the apparel trade. Completion is expected by April 1.

Powell Knitting Co., Spartanburg, S. C., has installed an integrated knitting unit to produce industrial fabrics for the coating trade. Twelve circular outerwear knitting machines and complimentary finishing equipment are on order.

Talon, Inc., Meadeville, Pa., has purchased **Bridgeport Fabrics,** Davidson, N. C., and will operate the acquisition as a unit of the Stanley, N. C., facility. The production of tape for slide fasteners will be continued at the latter location with James Hendley in charge.

For further information use Handy Return Card, Page 175

The ALDRICH *Synchronized Single Process* *Picker...* with HIGH COMPRESSION CALENDER



This is a true Single Process Picker, in which the finisher section is fed with a smooth, well-formed lap from the breaker section, instead of with loose stock from a gauge box or hopper feeder.

Aldrich laps are more uniform, inch-by-inch, and will make more uniform card sliver.

AldricH MachinE WorkS

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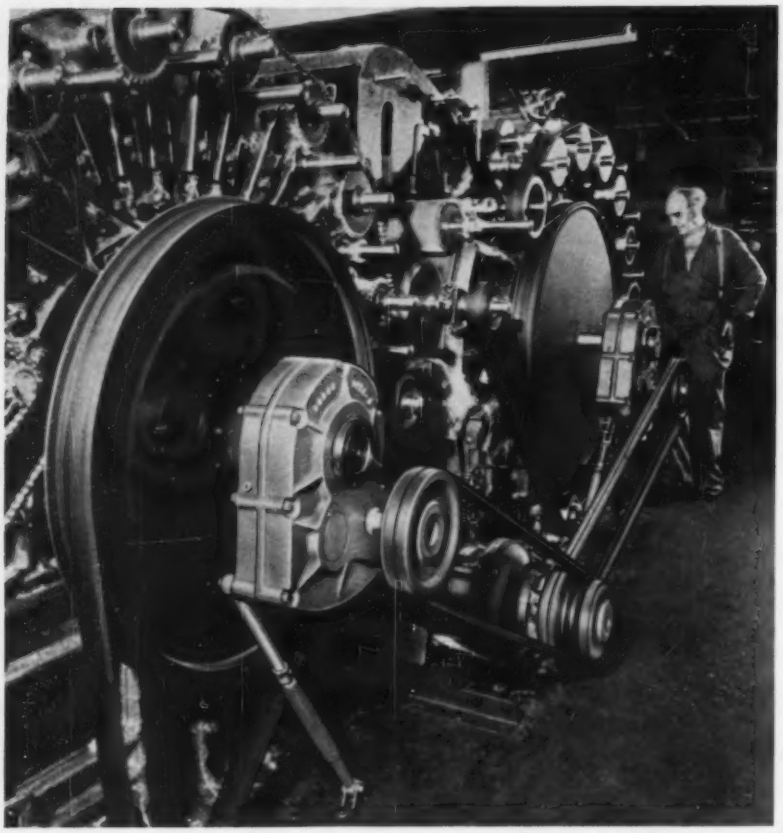
that simplifies speed reduction



DODGE TORQUE-ARM, America's most widely used shaft mounted speed reducer, will save money for *you.* No foundation, no sliding motor base, no flexible coupling, no installation fuss. Developed and perfected by Dodge, this reducer has been so widely accepted in industry that it is now built and stocked in this unmatched range of sizes and models: capacities up to 170 hp; output speeds from 10 to 400 rpm; ratios of 5:1, 15:1, 25:1; speed ratios up to 175 to 1 with correct selection of speed reducer and V-belt drive. Built-in backstop available. Also positive overload release. Vertical models. Flange mounted models. Special application models... Go modern—go Torque-Arm! See your Dodge Distributor, or write us.

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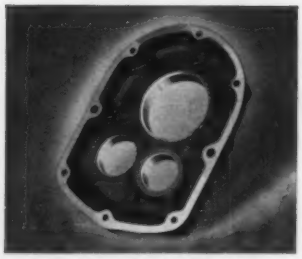
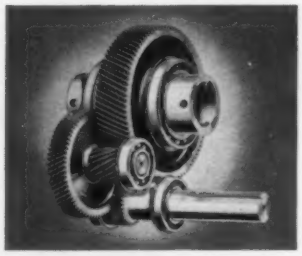
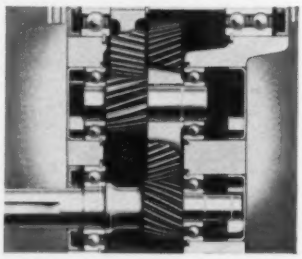


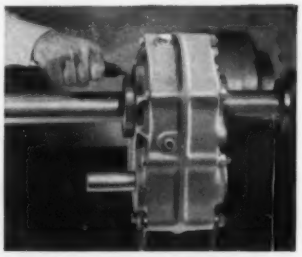
Rugged, semisteel housing holds bearing seats in line for entire life of unit. Laughs at loads. Corrosion resistant.



AGMA rated helical gears. Soft cores withstand shock; hardened surfaces defy wear. Teeth are crown shaved.



Gears are located *between* bearings and carry their loads without strain. Longer life, higher efficiency.



Unit slides completely onto shaft and locks on *both* sides of housing. This baby stays *put*—runs truer longer.

The Products with the Pluses... **DODGE** ***of Mishawaka, Ind.***

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Look under "Dodge Transmissioneer" in the *white* pages of your phone book. Factory trained by Dodge, he can give you valuable assistance.

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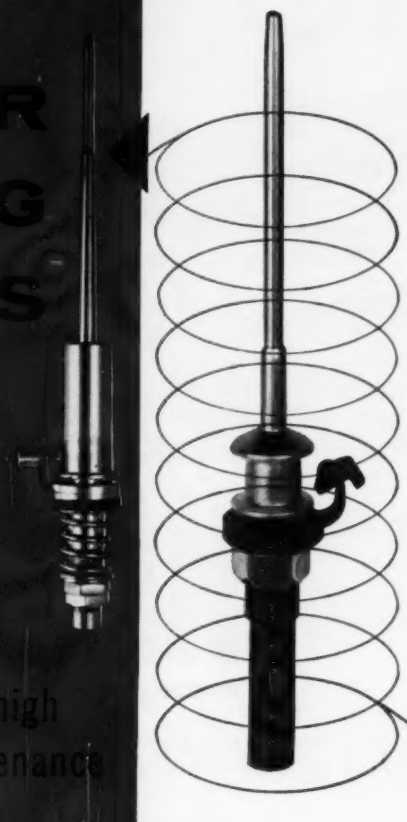

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Staff prepared Exclusive

At E. T. Barwick Mills

TUFTING gets a BLANKET order

OUT OF THE efforts of the machine builder, the fiber producer, and the tufter himself has come a tufted blanket about as indestructible as present-day fibers will allow. And pound for pound it is warmer than its woven counterpart. Napping raises the pile to almost any thickness, within loop limitations, to produce the insulating loft.

E. T. Barwick Mills, Inc., is a pioneer producer of this new fabric, conducting its pilot operations in its Jefferson Woolen Mills plant in Knoxville, Tennessee.

Possibilities seem endless. While the idea is so young that only a relatively few core materials (backing) and pile yarns have been checked out, already there is a combination of cotton sheeting and acrylic pile yarns that gives the housewife the option of laundering the blanket without fear of its dissolving, matting hopelessly, or shrinking laughably. Either machine or line drying will leave the nap in good shape.

Manufacturing is as simple as tufting with a 5/64″ gauge machine, adjusting the stitch count to control the weight, and setting the loop height to support the desired nap. It isn't necessary to balance loop heights on the two sides of the backing, as this takes place automatically. Napping the loops first webs them so tightly they don't pull through when the reverse or back side is napped. The napper divides the pile between the two faces.

Dyeing offers no extraordinary problems. The basic techniques of coloring the particular yarn are sufficient, and it can be done in rope form.

Solid-color dyeing follows tufting. And about the only care needed there is to keep the pile

yarns from pulling out before the backing fabric has time to shrink tightly about them. From that point on, the napper sets them immovably into the core fabric.

In the economic picture it is easy to pinpoint savings in floor space, capital, and a speed-up in customer service. There being a shortened gap between order and delivery, inventories shrink.

By the simple switch in technique, from napping at tufts rather than at warp and filling yarns, tear strength grows dramatically. It is pointed out that with the tufts being inserted at right angles to the base fabric they present themselves in the best possible napping position. The more the napper plucks at the top of the loops the more the loft increases and the more the blanket's insulating power grows. Conceivably, the tufts could be napped completely away without destroying any tensile strength in the base fabric or backing.

Contrast that picture with the way woven goods react to the napper's plucking. To begin with the only fibers the woven fabric can offer for napping are part of the fabric's warp or filling yarns. Thus each time a fiber is plucked loose and forced to stand up to be seen as nap, its holding power must be subtracted from the tensile strength of the base fabric.

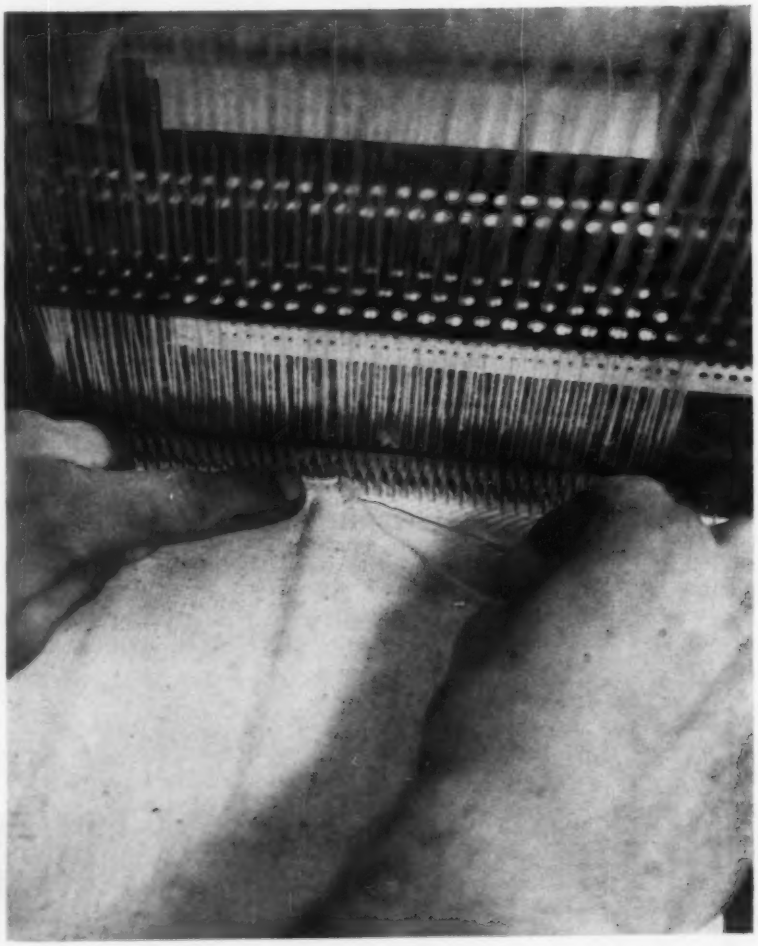
Barwick offers the standard sizes and later plans to branch into special dimensions as the need arises. Present plans call for marketing the entire line under the Jefferson Woolen Mill label.

Conceivably the bedspread producer may find his market shrinking before the impact of a blanket that can be brightly colored, printed in a multitude of designs, then tufted and napped, and still be cleaned almost as easily as a bed sheet. Overstitching offers almost limitless possibilities within itself.

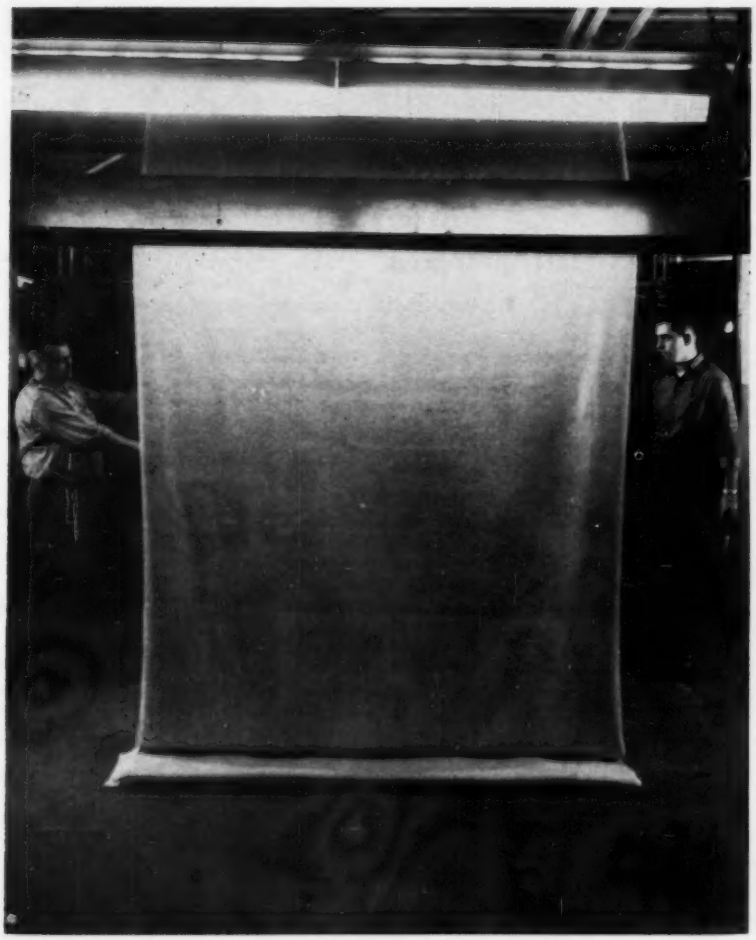
The loft and hand are controlled through the combination of yarn, denier, loop height, and amount of nap. Scratchiness can be ruled out entirely and allergies rendered a thing of the past.

Several things present themselves as obvious advantages. And foremost among the benefits is the manufacturing ease.

The blanket begins as so many loops per inch, inserted with a 5/64" gauge machine, to give needed weight and base for nap. Double rows of needles are threaded with tool below.



Solid colors allow beck dyeing after tufting. Pile yarns get fast colors that stand up under home usage and launderings. The napper, below, plucks pile into thick, soft, pad.



One high-speed tufting machine can easily insert the pile yarns nearly sixty times faster than a standard loom can weave its blanket. Examine this in every possible way and it still means the average blanket can be turned out of a tufter in about two minutes.

Some of the wider machines stitch two 80" blankets simultaneously. The balance of the operation, right up to final cutting, is carried out with the blankets in continuous length.

Steps in tufted blanket production are illustrated by the fabrics pictured below. Top to bottom: (1) sheeting used as foundation fabric; (2) blanket fabric taken directly from tufting machine; (3) same fabric after one run through napper (this is repeated to taste); and (4) finished blanket.

Typical loom cleanliness three days after the warp is changed and loom is given manual blowing off. Compare with picture opposite.

Loom cleaner boosts quality

Sheeting mill reports unit also lifts morale, cuts costs, and raises production

Staff prepared Exclusive

ABOUT a year ago Pickens (S. C.) Mill (21,000 spindles) excavated a basement, built a weave room there, and installed 96 new 50″ X-2 looms to keep in step with the trend to wider goods. Part of the improvement program called for junking some of the older, narrow looms.

An LC-3 Amco loom cleaner installed in the new weave room gives good results. It travels on an overhead track, making a complete trip over the entire weave room every 30 minutes. The looms produce sheetings from 22s warp and 24s to 29s filling yarns.

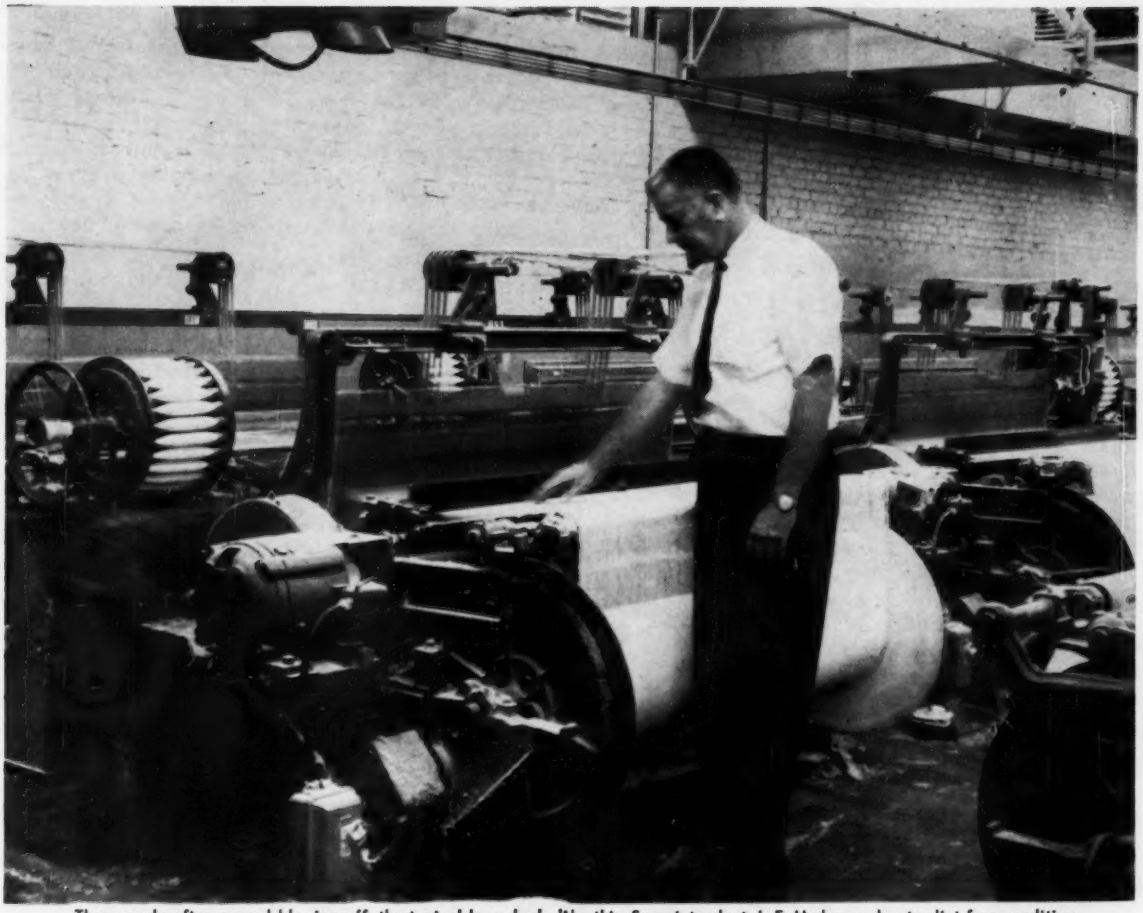
Along with better housekeeping are these benefits: (1) better morale; (2) 20% fewer loom stops; and (3) 20% fewer cloth defects.

Before the installation, cleaning practices required blowing off the looms manually every 24 hours. Now the looms are blown off manually only when the warps are out (once every three to four weeks), thereby effecting a labor saving.

Better quality is readily apparent in the fabrics, with 20% fewer defects showing up. Also, with 20% fewer looms stopping, efficiency is up considerably. The oily cloth, gouts, and other defects traceable to blowing off are practically gone, harness cleaning is reduced, and sweeping is cut by one third.

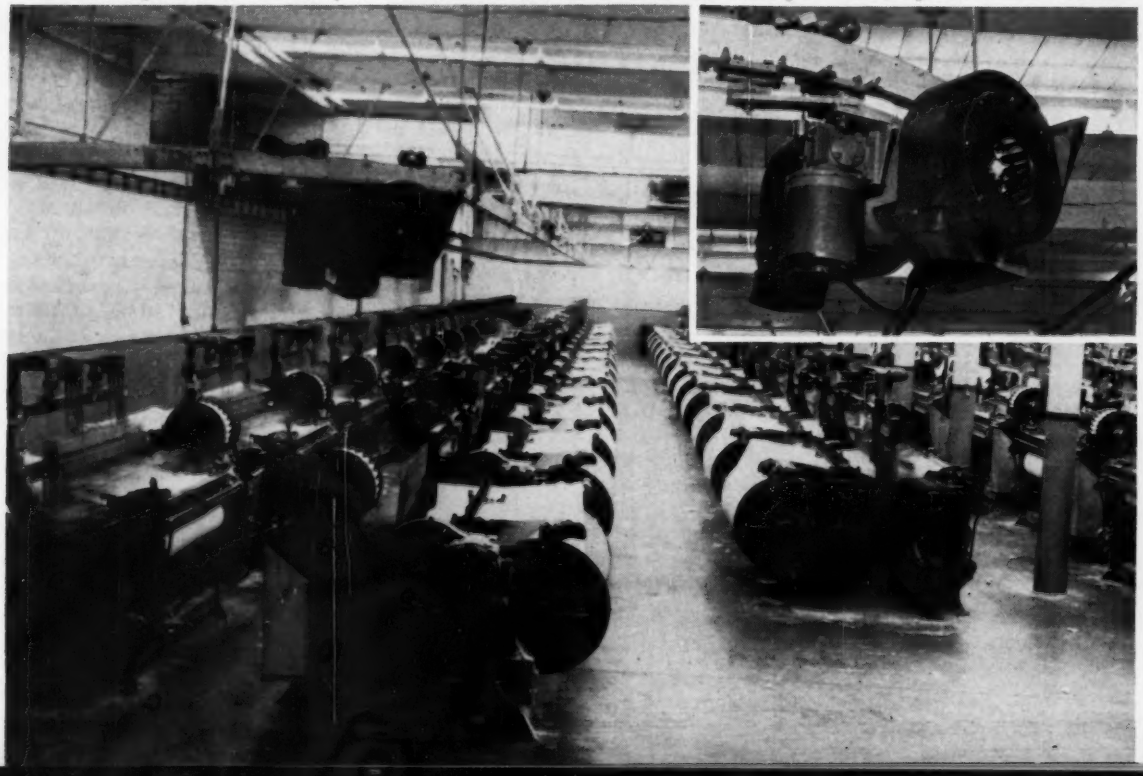
The overhead cleaner has an oscillating type blower that directs two columns of air in a pulsating and swirling motion downward onto the looms to agitate fly away from there. The blower travels about seven feet above the floor, uses the swirling blast of air to push lint from under the loom.

The entire top sides of the looms stay clean enough to reduce the



Three weeks after manual blowing off, the typical loom looks like this. Superintendent J. F. Underwood notes lint-free condition.

The cleaner cycles weave room every 30 minutes. Inset shows the fans with their rotating nozzles that give swirl to air streams.



manual cleaning to the point already described. The sweeping force picks up the lint accumulations from the floor.

"In terms of quality and economy, the cleaner is worthwhile," says B. F. Hagood, vice-president.

The 96-loom group makes an ideal size and location for one cleaning unit, and the weave room change is the first step in a long range plan to upgrade the end product to meet competition better.

Drives on the other looms will not permit installation of the cleaner at the present. But such equipment will be installed there when changes in the weave room equipment permit.

As for blower maintenance, it is as simple as stopping it every 24 hours and blowing it off, and occasionally refilling the oil cup.

Executive views *(from page 31)*

rather than money dumped indiscriminately into their countries to be squandered at the behest of local politicians. We know exactly what our own grafters would do here in the United States if somebody offered us some free money, so why should we expect it to be any different in another country? Yet we are criticized if we try to tell any of these beneficiary countries how we think the money ought to be spent.

It is entirely possible that we could do a vast amount of good in many a little hardscrabble country if we would finance some schools and teachers to instruct these people in better methods of agriculture and better husbandry and in the mechanical art in which they are so generally deficient. That is, we could help them to help themselves; but that seems to be far from the plans of our politicians. Having nationalized freeloading, they would not put it on a worldwide basis, with the bankrupt farmers of a score of our states looking longingly at the benefits being handed out to other bankrupt farmers throughout the world.

What most foreign nations need is know-how in the management of their own natural resources. That's all we have, since there are many areas in the world blessed with natural resources similar to our own. We developed the knowledge of what to do with these resources and we have the will to do it. If we can inculcate in other people this same desire and impart to them our knowledge, we might be able to work wonders, but if all we are going to do is to make professional mendicants out of millions of foreign people, as we have already done with millions of our own people, we will get very little value received for our money.

In the course of trying to help struggling nations develop their natural resources, capital is needed. Perhaps we will be justified in granting some of this capital in special cases, but in most cases if the expenditure is worthwhile, the returns from the expenditure ought to be able to pay off the debt.

This idea, however, of people paying off debts is anathema to the worldwide do-gooders. Uncle Sam is pictured as Uncle Shylock, even if we lend money on favorable terms with little or no interest, and finally forgive most of it because the little busted country made no effort to pay it back. We must simply hand the money out with no strings, to satisfy these gullible uplifters, and *that* we have been doing approximately to the tune of $15 million a day. This is a whole lot of money, even for the United States, and any citizen of our fair country can point to dozens of things in his own community that could be considerably uplifted with the application of a small bit of $15 million a day.

We are going into countries that need better chickens and pigs and sheep and cows and horses, and better methods of plowing and husbandry, and we are talking about building paved roads where there are no automobiles, and vast hydro-electric plants where the people can seldom buy the electric lamps if the current were furnished free. It seems to us that there is a vast amount of foolishness mixed up with this whole foreign aid racket, and that more people need to be thinking about the foolishness than have been.

We certainly wish the world well, and we ought to be willing to cheerfully do what we can to help its progress. And those items of foreign aid which make sense to a reasonably practical person, and which can be reasonably expected to produce worthwnile results in improving the economies of backward countries, are worthy of our consideration. But dumping vast sums of money into the pockets of people who don't need any more money seems even at best rather silly.

100% wool fabrics more popular for apparel

■ A MARKED increase in the relative importance of 100% wool content fabrics in the first six months of 1961 over the year before in the 9-13 oz weight class for men's and boys' apparel has been reported by The Wool Bureau.

In an analysis of the shifts in weights and constructions of woven wool apparel fabrics it was noted that this gain was limited to worsted constructions where 100% wool this year accounted for 89% of the total 9 - 13 oz worsteds as against 81% last year. Woolens of 100% wool content recorded a loss in relative importance from 48% of 1960's 9 - 13 oz woolens down to 45% of the 1961 corresponding total.

Production of woolens of 100% wool content in women's and children's wear fabrics rose by 7% over a year ago, while wool blends declined 22%. The gain was said to be most significant in the 9 - 13 oz fabrics and those weighing 20 oz and over. A decline in wool blends was noted in all weights.

by Robert I. Earnest
Controller
Swift Spinning Mills, Inc.
Columbus, Georgia

Exclusive

"We cut payroll processing time 40%"

Swift Spinning Mills did it with a single-keyboard, multiple record system

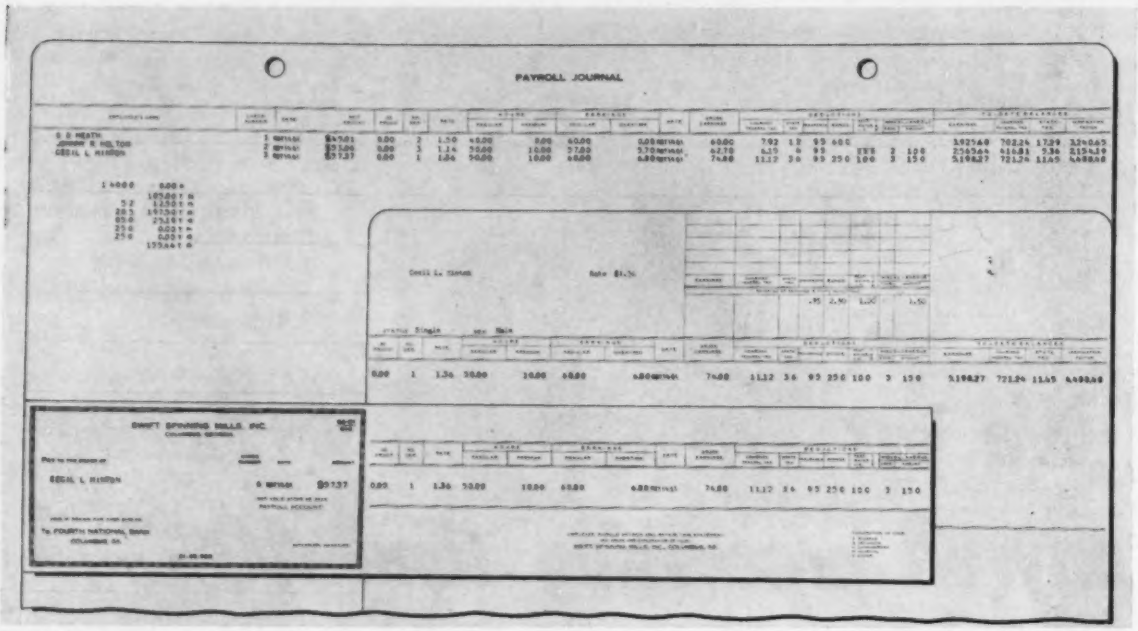
SWIFT Spinning Mills now processes payroll checks, statements, journal and earnings records for 550 employees on a single machine in a day and a half each week. If necessary, the job could be done in less than a day with full machine time utilization.

This efficiency is possible because the company recently installed a new electronic accounting machine (a National Compu-Tronic) which performs all the computations, accumulates all the totals, and prints all the records required in processing the payroll.

Under the new system, the payroll clerk does not have to transfer products from a calculator to the accounting machine. She enters

ABOVE: Compu-Tronic is an accounting machine capable of making electronic computations. It may be changed from one application to another in less than a minute simply by replacing the form bar across the front of the carriage.

BELOW: Operator uses plywood box designed in the Swift office to make handling of earnings records and checks easier. Color-coded state income tax chart is mounted at side for easy, accurate reference. Operator can process checks plus related records faster than check a minute.



Compu-Tronic processes the pay check, pay statement, earnings record, and payroll journal simultaneously, and prints out a payroll summary for each department as shown on the left side of this specimen journal.

Machine proves old-balance pickups, makes all computations, numbers checks automatically, and determines net pay. Checks for hourly and incentive-plan employees are processed without changing the form bar.

the basic information through a single keyboard; the machine generates the products electronically within the machine and transfers them automatically into the proper totals. Results are printed out automatically.

Former Procedure. Formerly, the records were produced on an accounting machine designed specifically for the payroll operation. A calculator performed the computations.

Under this system, writing the payroll required two and a half days and the machine was necessarily idle for the rest of the week because it was not adaptable to any other application.

Electronic Procedure. As the payroll clerk starts to process the records for a particular employee, only the journal is in the carriage.

She begins by entering the old balance for wages, combined social security and withholding tax, the state tax, and a proof figure, all taken from the last line in the earnings record. The machine checks the entries against the proof figure to detect any error in pick-up. If there is an error, the balances are wiped out and the carriage returns to its starting position so the operator can make the entries correctly. If the original entries are correct, the machine prints zero in the proof column, the carriage opens and the operator inserts the employee's earnings record and the pre-addressed check over the journal.

Next, the operator enters the number of dependents and the machine prints the entry in the proper column. The operator enters the number of hours actually worked by the employee during the week; the machine prints the number of hours entered and automatically determines and prints the overtime hours.

At this point in the procedure, the operator must indicate whether the employee is on hourly pay or incentive pay. At Swift, employees paid under the different plans often work in the same department. Since the payroll must be processed by department if the machine is to accumulate totals by department, it was mandatory that the machine be set up to handle records for either type of employee at the option of the operator. Without this flexibility, much of the advantage of the new system would be lost.

If the employee is paid by the hour, the operator enters his rate and touches the tab key. If the employee is paid under the incentive plan, the operator enters an overtime factor and his gross pay from his time card and touches the motor bar.

For either type of employee, the machine then automatically calculates and prints regular earnings, overtime earnings, and gross earnings. The Compu-Tronic also automatically computes and prints his combined FICA and withholding tax. If his pay for the year exceeds $4,800, the machine automatically eliminates the FICA deduction.

The operator then visually checks the gross earnings printed in the forms inserted in the carriage against a predetermined minimum printed on the earnings record to see if the employee is subject to the state income tax. If so, the operator refers to the summarized table on a stand next to the machine and enters the amount of the state tax in the machine.

The State of Georgia income tax

varies with income and dependents, but not according to a formula. If in the future, the State of Georgia should change the requirements so a formula could be used, the machine could easily be programmed to compute this tax.

Deductions. From the earnings record, the operator picks up the deductions for insurance, bonds, rent, water, Community Chest, and other miscellaneous deductions. Some of these deductions occur only once or twice a month, so a single column may be shared.

When the last deduction is entered, the Compu-Tronic automatically updates the year-to-date balance and prints the new proof figure for balance pick-up at the end of the next pay period. The carriage then returns and the machine automatically prints the check number, the date, and the net amount of the check.

The procedure is then repeated for the next employee.

When the records have been completed for all the employees in a department, the machine prints out on the payroll journal the following totals:

1. Hours worked
2. Gross earnings
3. Overtime earnings
4. Regular earnings
5. Combined federal taxes
6. State tax
7. Insurance
8. Bonds
9. Rent, water, Community Chest
10. Miscellaneous deductions
11. Net pay

Every quarter, the Compu-Tronic is used to make up the 941-a reports, and every year it is used to complete the W-2 forms.

Other Applications. One of the main advantages of the system is that the machine we use is flexible enough to handle other accounting functions, so that it does not sit idle for the remaining three and a half days in every week. Simply by changing the form bar, a one-minute operation, the machine may be adapted to practically any other accounting operation.

In addition to the application described in this article, we use the machine to compute commissions and generate a concise commission report. Soon, the machine will also be handling wage accrual, pre-payroll, and the daily reports on the incentive payroll which are posted in the departments.

After the installation of these additional applications, other jobs will be mechanized as machine time permits, so that full utilization of this most flexible machine is obtained.

U.S. inaction unfair to textiles—Jackson

Staff report

■ THERE is "a growing concern in the textile industry over continued delays by the government to correct unfair situations" in the industry, the executive vice-president of the American Cotton Manufacturers Institute told those attending the 55th annual convention of the North Carolina Textile Manufacturers Association.

Robert C. Jackson of Washington, addressing the convention at Pinehurst, N. C., said these "unfair situations" result from government inaction, and he cited three examples:

(1) Postponement of filing dates on the industry's request for control of imports before the Office of Civil and Defense Mobilization.

(2) The delay "and rumored opposition in certain branches of the government" to carrying out part of President Kennedy's program for the textile industry.

(3) "The delay in working out a more equitable depreciation allowance on machinery and equipment*."

The timing and nature of action by the government on these issues will give an indication of the effectiveness of the President's program, Mr. Jackson added.

Whiteford S. Blakeney, Charlotte attorney, addressed approximately 400 textile executives attending the meeting. He said none of the major U. S. governmental changes of the last 25 years has been submitted to the people through machinery established by the Constitution of the United States.

D. R. LaFar, Jr., (second from left) of LaFar Mills, Gastonia, N. C., is the new president of the North Carolina Textile Manufacturers Association, succeeding *Donald R. Jonas* of Johnston Mills, Co., Charlotte (second from right). *Hal W. Little* (left) of Little Cotton Manufacturing Co., Wadesboro, N. C., moved up from second to first vice-president. *Marshall Y. Cooper* (right) of Harriet-Henderson Mills, Henderson, N. C., is the new second vice-president.

*A new depreciation schedule for textile machinery was announced the week after the convention.—Eds.

Doffer-Spinner Work Loads

This system for setting them automatically allows for interference

by Thomas F. O'Connor—Exclusive

PART 2*—THE SPINNER

IN DEALING with the doffer, the term machine means frame, but in dealing with the spinner, each individual spindle is a machine. The spinner services his assignment by making regular patrols or cycles. During each patrol he attends to broken ends on spindles which are not running, or at least not producing. For our purpose this is stopped time work.

He creels in new supply packages (stopped time again). He attends to miscellaneous other duties which the time study has carefully noted and allowed for. Many of these can be done while the spindles are running and producing. For example, much of the cleaning about the frame can be done safely without stopping the frame. He will not turn back at any time.

When he encounters a frame which is in the hands of the doffer or otherwise unavailable to him, he will walk past it and resume his work at the next free side. When he reaches his starting point again he may pause for relaxation, or not, depending on arrangements.

In computing his workload, due allowance is made for the time he spends walking, which is one of his major time-consuming activities. It is also necessary in calculating his efficiency to take into account the effect of doffing losses.

Naturally the number of spindles enters into the calculations, but here is an important difference between random servicing and cyclic servicing. In the case of random servicing, the number of machines determines the workload for any given case. But in cyclic servicing, any number of machines, however small or however large, is a full load. It is necessary to couple together workload and efficiency considerations to arrive at a reasonable assignment.

There are two ways of tackling the problems of assignment and efficiency for cyclic servicing. One way is to use a trial figure for the assignment and then proceed to calculate what the standard efficiency would be. The reverse procedure is simpler and is the one we are going to use. It is assuming a likely efficiency and finding the assignment which will fit.

Additional Time-Study Data. For convenience, the data included in lines D1 through 10, used in doffer calculations, are repeated below. Also, for convenience, the symbol mrh will be used to indicate one machine running hour at 100%. Symbol r means the frame is running; symbol s, stopped.

Line	Description	8s	30s
D1	Count	8s	30s
D2	Ring size	2	2
D3	Front roll diameter, inches	1.375	1.375
D4	Roll speed, rpm	177	116
D5	Twist, turns per inch (tpi)	9.15	19.20
D6	Package weight of yarn, pounds	0.253	0.253
D7	Doffer's work, s, minutes per doff	5.85	5.85
D8	Doffer's work, r, minutes per doff	4.06	4.06
D9	Auxiliary work, s, minutes per 8 hours	14.4	14.4
D10	Miscellaneous unavoidable delays, minutes per 8 hours	14.4	14.4

*Part 1—The Doffer appeared in the November issue, pages 89 through 94.—The Editors.

A. Data Common to Both Yarns:

Line	Description	Unit time (minutes)	Freq. per 1000 mrh	Minutes per 1000 mrh
D11	End break below roll	0.198	31.5	6.24
D12	Creel break	0.405	5.25	2.13
D13	Lap up	0.450	4.94	2.22
D14	Stops due to breaks per 1000 mrh (This is 0.0417 per mrh)	—	41.69	—
D15	Minutes spent on breaks per 1000 mrh (This is 0.0106 per mrh. Figures include an allowance of 25% for fluctuations. Note that these tasks are performed while spindle is not producing.)	—	—	10.59
D16	Cleaning by the spinner while the spindle is producing (0.0085 per mrh)	—	—	8.5

B. Creeling—Special to Each Count

		8s	30s
D17	Unit time per creel, minutes	0.166	0.166
D18	Weight wound per mrh (12)	0.1828	0.0317
D19	Weight on supply bobbin, pounds	1.015	1.015
D20	Creels per mrh (D18) ÷ (D19)	0.1800	0.0312
D21	Creels per mrh, adjusted	0.225	0.0390
D22	Creel time, min per mrh (D17) x (D21)	0.0374	0.0065

The adjustment on line D21 consists of adding 25% to allow for fluctuations. A similar allowance is made in the frequencies of section A.

C. Combining A and B

D23	Time in min per mrh (D15) + (D16) + (D22)	0.0565	0.0256
D24	Stops per mrh, q, (D14) + (D21)	0.2667	0.0807
D25	Average min per stop, t, (D23) ÷ (D24)	0.212	0.320

D. Walk Time. The allowance is 0.005 minutes per foot, and 162 spindles occupy a length of 48 feet.

D26	Walk time per spindle, decimal minute	0.0015

E. Free Time. The spinner is allowed 20%, which is equivalent to saying that he patrols for 80% of his time including the time he spends working during the patrols.

D27	Work factor, k	0.80

The Spinner's Efficiency. A general expression for machine efficiency under cyclic servicing is:

$$E = 1 - \frac{S^*}{2n}$$

where n is the number of machines in the assignment, and s is the average number of stopped machines met in the course of a patrol. In the case of spinning, the doffer's efficiency has been denoted by E_d, so E_s will be used for the spinner's efficiency.

Now the effect of E_d is that the number of machines (spindles) available to the spinner at any given time is not the same as the total number in his assignment. The number available is less, naturally. But it is the number available which has to be used in the above expression for efficiency. Let this number be n_1. Then:

$$E_s = 1 - \frac{S}{2n_1}$$

Or, if g is the average number of machines the spinner has to patrol in order to find one which is non-producing, so that:

$$g = n_1/s; \text{ then } E_s = 1 - \frac{1}{2g}.$$

Of course neither s nor g nor n_1 is known at this stage. A value has to be assigned to one of these three arbitrarily, and then the corresponding values of the others can be determined. Let us give a value to g, which is the same thing as assuming an efficiency. In the choice, only experience can guide. Having made the choice, s and n_1 follow, and then, through E_d, n_2 is found, n_2 being the gross number of spindles assigned.

When g equals 20, meaning that on an average one spindle in 20 would be found not producing, E_s equals 0.975. This seems reasonable for the spinner's efficiency on 8s yarn. When g equals 33⅓ (equals 3 spindles in 100 not producing), E_s is 0.985, and this seems reasonable for the 30s. These two values of g will be used in illustrating the technique. Bear in mind that for a given set of time study results, once g has been chosen, there is no further freedom. Everything then is frozen — efficiency, number of machines, duration of the average patrol, and so forth. Calculations continue:

Line		8s	30s
37.	g (assumed)	20	33 1/3
38.	2g	40	66 2/3
39.	1.0 divided by 2g	0.025	0.015
40.	E_s = 1.0 minus (39)	0.975	0.985
41.	E_s as per cent	97.5	98.5

It is not difficult to show that the average number of non-producing spindles met in a patrol is given by the expression:

$$s = \frac{120kE_d}{q(2g-1)\ (gw + tE_d)}$$

Only s is unknown, so it can be calculated as follows. First, the numerator (lines 42 through 44):

42.	120 x k	96	96
43.	E_d from line 28	0.787	0.898
44.	Numerator equals (42) x (43)	75.5	86.2

Next, the denominator. q(2 g — 1) is the first part:

45.	2g — 1 or line 38 less 1.0	39	65 2/3
46.	q, from line D24	0.2667	0.0807
47.	q (2g — 1) or (46) x (45)	10.42	5.30

The second part of the denominator is gw + tE_d

48.	w, from line D26	0.0015	0.0015
49.	gw, that is (48) x (37)	0.0296	0.0493
50.	t, from line D25	0.212	0.320
51.	tE_d, that is (50) x (43)	0.1670	0.2875
52.	(gw + tE_d) or (49) + (51)	0.1966	0.3368

Now, complete the denominator by multiplying together lines 47 and 52, with the result shown in line 53. The average number of stopped machines encountered per patrol is on line 54.

53.	Denominator, or (47) x (52)	2.045	1.788
54.	s is given by (44) ÷ (53)	36.9	48.2

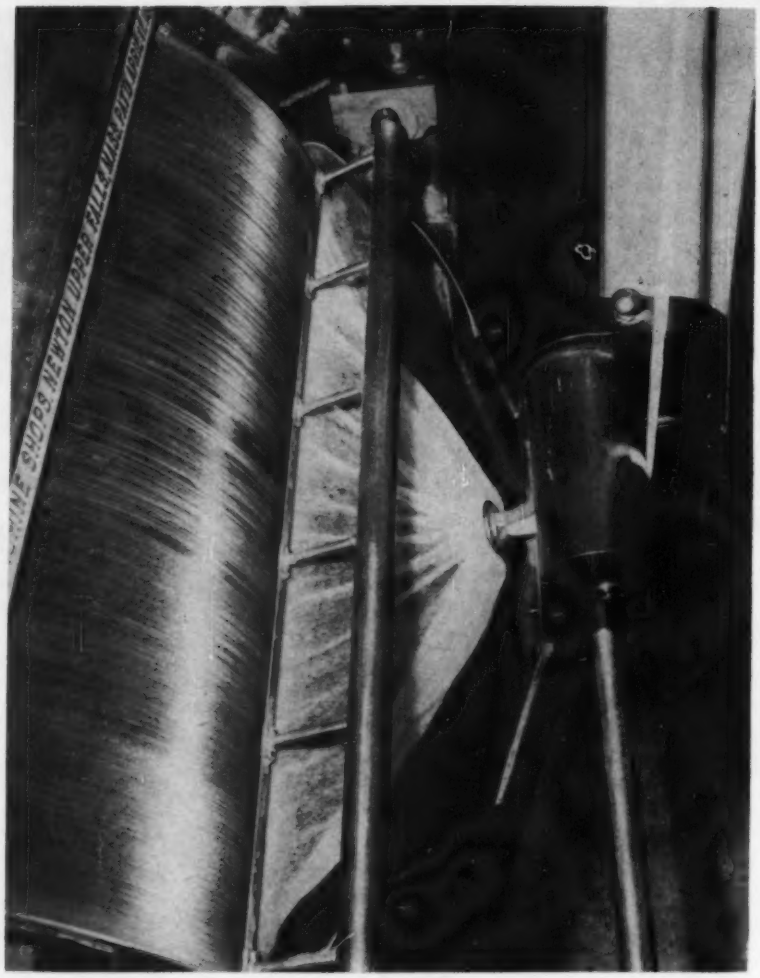
*See Reference 1 at end of article.

Continued on page 103

Just what will metallic clothing do?

Data Alabama mill men uncovered in a closer look at metallic clothing performance

Staff report



PROMPTLY at 9:30 a.m. on October 7, Secretary-Treasurer **Cleveland Adams** called the fall meeting of the Alabama Textile Operating Executives to order. The representatives settled into their seats in Thach auditorium, Auburn University, to begin the day's work. General Chairman **W. N. Scoggins** took the stand, announced the day's agenda, and introduced the carding discussion leader, **Joe Lanier, Jr.**, and **E. E. (Ed) Camp** who was to lead the spinning talks.

Metallic clothing performance again proved the big topic of the carding session. While the organization devoted much time to the same subject at the fall meeting last year, the intervening year had brought a couple more mills into the picture and lent just 12 months more experience to all. And ways to control choke formation proved the most absorbing part of the big question.

Most of the information related to the clothing appears in *Tables 1* and *2*. The column headings reflect the highlights of the 25-part topic, and the text takes up the remainder.

Chokes. With the installation of metallic clothing, apparently the chokes (not lap lumps) appear in endless procession. But not quite. *Mill E* had just as many (or just as few) on conventional clothing.

Others report a different picture. *Mill S*, for example: "Cut the front cylinder screen off one inch. This helped some. Put brushes, pieces of leather, and various other things on the side of the doffer to help keep the chokes knocked out. This helped some. The best thing to do is keep the cylinder centered in the card, keep the screens set properly, and have the card tender remove the chokes when they form."

Six other plants use rubber strips and /or whiskers on the doffer sides as control measures. *Mill D* does nothing, but is experimenting with settings; *Mill O* depends on cleaning and setting; *Mills F, J,* and *K* respectively pull chokes on 8-hour, 11-day, and 13-day schedules; *Mill I* takes no steps to control them; *Mill M* checks and cleans the cards frequently; and *Mill N* bowed the back plate to direct currents toward the center of the cylinder. Continuing with its program, the plant installed a special screen, put rubber strips

TABLE 1. Metallic Card Clothing Performance

Mill	Cotton Grade	Cotton Staple	Number of Cards Involved	Sliver Weight Grains/yd	Make of Wire[1]	No. of Wire Cyl.	No. of Wire Doff.	How Long In Use?	Both Doffer and Cylinder Clothed?	Feed Rolls Bolted Down?	Sliver Uniformity	Nep Count	Trash in Sliver	Flat Strips Lower By	Remarks
A	M	1 1/32	66	55	H	35	29	6 mos	Yes	Yes	Up slightly	Down 50-60%	25% less	10%	As a choke control, bowed backplate to channel air to middle of cylinder
B	MB	1 1/16	217	57 & 50	H	35	29	2 yr	Yes	Yes	No effect	Down 50%	Up slightly	Remarks	Uses rubber strip and whiskers on side of doffer to control chokes; flat strips dropped from 3.62% to 2.94%
C	M	1 1/8	108	59	H	35	29	1-5 yr	Yes	Yes	Down 25%	Down 50%	—	—	Antichoke rubbers on side of doffer and cylinder
D	M	1 3/32	126	60	H, A	—Remarks—		Remarks	Yes	Yes	Up 30%	Down 50%	Less & finer	53% (M) 42% (SM)	Flat strips show higher saving in lower cotton grade; uses Hollingsworth 35 and 29 wire on cylinder and doffer, Ashworth 301 on cylinder, P-A 65 doffer wire and has a few cards on H.G. wire; 8 cards in use 1 year, 118 clothed January to June this year
E	MCSLL SLM	1 1/16	69	50	H	—	—	21 mos	Yes	Yes	Up Slightly	Down 31.6%	Less	Down 7.2%	Choke problem no greater than with conventional clothing; flat speed unchanged
F	M, BSL SL, BLM	1 1/16 & 1 1/32	48	54	H	35	29	6 for 18 mos.; 42 for 3 mos	Yes	Yes	Up 15%	Down 15-20%	Less, finer	Remarks	Flat strips down from 2.75% to 2.10%; pulls chokes from sides of cylinder each 8 days
G	M	15/16	39	70	—	35	29	18 mos	Yes	Yes	Up 20%	Down 40%	About same	Remarks	Change in flat strips awaiting study finish; rubber strips and bristles on doffers
I	M	15/16	39	70	H	35	29	18 mos	Yes	Yes	Up Slightly	Down 40%	No change	Not tested	
J	LM SLM	1 1/32	202	56	H	35	29	Remarks	Yes	No	Up	Down	Down	18 to 15 grains	Grinders hook out sides each 11 days
K	SLMB	1 1/32	53	52.5	H	35	29	1 yr	Yes	Yes	Up	Down 12%	No change	Down 0.96%	Uses Non-Fluid oil on doffers, cylinders, and lickers-in and uses shear pins in side shaft bevel gears
M	SLMB	1 1/8	33	50	A H	303 35	70F 29	6 mos avg	Yes	Yes	No change	Down	No change	Down 2.31%	Neps down 2 neps per grain; new Eureka flats; frequency cleaning, checking control chokes
N	SL, LM	15/16	132	56	—	—	—	6 mos	Yes	Yes	Up 10%	Down 25.5%	Unknown	Down 12%	Chokes prevalent despite bowing back plate, installing special screen by Elliot, and using rubber strips on doffers.
O	SLB	1	245	58	—	—Remarks—		32 yr	Yes	Yes	Up	Down	—	Down 40%	Strict control of cleaning and setting removes choke problem; nep count down 10 per 100 square inches; on cylinders have Ashworth 9, 301 and Hollingsworth 27 and 35; on doffers have Ashworth 9 and PA 65
P	M	1	165	62	H	35	29	1 yr	Yes	Yes	Down 13% (U)[2]	Down 20%	—	—	Changed cylinder screen design to control chokes
R	M, SGM	15/16 to 1	280	62	—	—Remarks—		5 yr	Yes	Yes	Up 10-12%	Down 20%	No change	Down 12.87%	Rubber strips on each side of doffer act as choke control
S	SLM	1	201	58	H	35	29	7 mos	Yes	Yes	Remarks	Down	No change	Remarks	Nep count down from 25 to 18 per 100 square inches; slowed flats from 1 3/4" per minute to 0.40 inches per minute and brought flat strips from 2.25% to 1.2%; cut front cylinder screen off 1", put brushes, pieces of leather, and various other things on the side of the doffer to help keep the chokes out, and reports the best choke control is card setting, cleaning, and in having operatives remove them
T	M MCSLL	31/32 to 1	75	70	H	—Remarks—		1 yr	Yes	Yes	Up	Down	—	No change	Doffer equipped with nylon bristles to brush out chokes

[1]H=Hollingsworth; A=Ashworth [2]Uster

TABLE 2. Card Cleaning, Stripping, Grinding, and Setting Frequencies *(metallic clothing)*

Mill	Cleaning			Stripping	Grinding	Setting			Remarks
	Backs	Fronts	Mopping			Backs	Flats	Over-All	
A	—Twice each shift—			Wkly	As needed	—About each 30 days—			No maintenance problems; blows out weekly; supplier does grinding
B	—	2 hr	8 hr	120 hr	As needed	—Every three weeks—			Cleans screens and underneath every 9 to 11 days; grinds very little and uses stone grinder; no maintenance problems
C	—	—	—	2 wk	As needed	6 mos	3 mos	—	Pulls chokes at stripping; blows out when setting fronts and backs; fly blows out between doffer and bonnet on Dobson and Barlow cards
D	4 hr	24 hr	24 hr	120 hr	As needed	—	—	21 days	More fly and chokes than with conventional
E	—	2.5 hr	Wkly	12 days	None yet	—No schedule yet—			Grinder cleans card completely every 12 days; no maintenance problems
F	—	4 hr	Twice wkly	Wkly	Remarks	—	—	48 days	Cleans out back fly each 8 hours, front fly wkly; supplier has ground the only two cards needing it; no maintenance problems
G	2.5 hr	2.5 hr	24 hr	Remarks	As needed	—	—	4 wk	Chokes on Lowell cards; strips every 24 hr on osnaburgs, wkly on white work; checks settings every 2 weeks
I	4 hr	4 hr	24 hr	Wkly	None yet	15 days	15 days	45 days	No maintenance problems
J	—	2 hr	8 hr	144 (hand)	Remarks	—	—	22 days	Grinds regular flats each 22 days; cylinder as needed
K	—	—	—	Wkly	None yet	—	—	13 days	Chokes cleaned each 13 days; web jumps comb sometimes and forces bottom plate into cylinder wire
M	—	—	—	Twice wkly	As needed	—	—	—	Pulls flat strips each 4 hours and droppings each 8 hours; cylinder screens are kept polished to prevent waste
N	8 hr	8 hr	8 hr	Wkly	As needed	—Remarks—			No maintenance problems; sets 15 backs and screens/week/fixer, first round; 15 fronts and flats/week/fixer, second round; 15 doffers/week/fixer, third round
O	—	1.5 hr	24 hr	Wkly	As needed	—	—	3 mos	Wipes licker-in bonnet when laying lap; cleans clearers each 24 hours; pulls chokes each 13 days; pulls screens each six months; chokes; damaged clothing hard to repair
P	—Remarks—			Wkly	None	—	—	55 days	Maintenance and cleaning same as conventional
R	—	8 hr	24 hr	120 hr (brush)	—	—	672 hr	—	Blows off cards with compressed air each shift; sets flats, licker-in, and mote knives each 1344 hours; grinds flats each 672 hours with drum grinder; no maintenance problems
S	—	4 hr	8 hr	Wkly	As needed	8 wk	8 wk	—	Grinds flats every 4 weeks; tender pulls chokes out when not otherwise occupied; cleans under fronts each 24 hours, cleans out motes and fly each 8 hours, stops card and removes chokes weekly and between cycles as necessary; blows cards every two weeks; pulls screens and backs each six months; grinds flats; web jumps comb now and then and builds up to force bottom plate into cylinder wire
T	8 hr	2 hr	—	120 hr	None yet	—No schedule yet—			No maintenance problem; blows off weekly

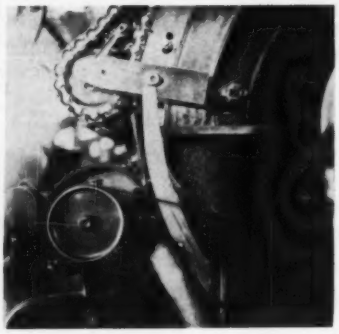
on the doffer— and continues to have chokes. *Mill P* changed cylinder design.

Judging from the impromptu discussions, the chokes are a real problem that come out of nowhere. Too, they seem universal, as the control measures printed in the box below indicate. These came to TI as kink contest entries, one from Israel, one from Italy, and one from India. And while they do not necessarily come from mills using metallic clothing, they do concern the "blowing-fly" puzzle.

Possibly the accumulations that lead to lumping or choking in un-

(TI for November, 1961, page 71, describes a stop motion to prevent lump damage to metallic clothing.)

Air current control measures that have worked



■ Our H & B cards resisted every effort to stop the fly from blowing out the cylinder ends until this wooden member was fitted as shown. The block is about an inch thick and fits between the side framing and the cylinder at the point suggested in the photo. Shape the block to conform to cylinder curvature.—*India.*

■ Loss of current control arises whenever the distance between the ends of the cylinder and the screen arches is too great. In all such cases I have seen, the distance is greater than the width of the screen itself. When bolted to the arches, the screens then deform seriously, letting the air flow in the wrong direction and carry spinnable fibers with them. On the H & B card this flow is noticeable around the cylinder ends.

We corrected this condition by setting the cylinders exactly on

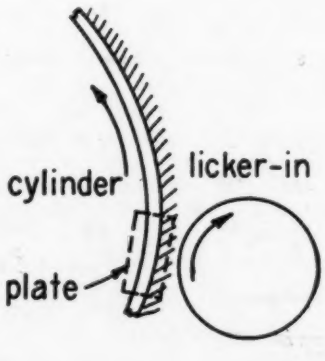
Arrows point to the bosses, welded up and dressed to position the arches from the cylinder ends.

center between the card sides and by welding bosses around the bolt holes in the arches. We dressed off the weld metal to position the arches approximately 1 cm (0.0393") from the cylinder ends. This tolerance is kept throughout the length of the arch.

The doffer and the licker-in screen mounts are corrected accordingly. The last adjustment necessary is to form the arches to the correct circle by setting them to a wooden jig. With the arches given the correct curvature, and mounted the correct distance from the cylinder ends, the screens bolt to the arches without being strained out of line anywhere.—*Israel*

■ Every time there is more than 0.01" to 0.012" clearance between the vertical sides of the cylinder and framing, the cotton leaks on the sides, entering from where the licker-in touches the cylinder. To prevent this, install a metal plate about 4" long and of suitable thickness on the inner side of the framing, starting 1" before the point where the cylinder and the licker-in meet. This distance is adjustable on some cards, as in the case of the Dobson & Barlow card.

On cards of that make, there is a piece attached to the licker-in



pedestal by a projection which may be filed away until the piece nearly contacts the cylinder side.

With other constructions, Tweedales for instance, where this space is closed by the bend itself, it would not be advisable to push the bend toward the cylinder because this would alter the settings of flats and back plate. In this case, it is necessary to fasten to the inside face of the bend a sheetiron strip of suitable thickness, 0.005" to 0.010" usually, and cut to the cylinder radius, to close cylinder-to-bend distance to the required 0.010".—*Italy.*

wanted places collect there from a combination of causes—currents and the absence of the friendly territory the stray fiber used to find below the wire knees.

Perhaps they are inevitable, for a spokesman from the plant with the longest metallic-clothing record present said briefly: "You must set up some sort of choke-pulling schedule." That firm pulls chokes from the doffer ends every shift and from the entire card every two weeks.

An unidentified person asked: "Has anyone changed screen types to get away from the trouble?"

"We are using the old flanged type," came a reply, "but we think they cause us trouble from fly collecting in the gauge holes. When these build large enough, the lumps break loose and are sucked into the cylinder path."

"Has anyone had trouble with unchanged screens?"

No one answered this directly, but another representative rose.

"We have tried so many things . . . still have chokes. Probably the answer is going to be in air current control."

"How often do you pull them?" he was asked.

General Chairman Scoggins

"On each grinding."

The scene shifted as another representative asked, "Just what do you mean when you say choke? Where do they occur?" He got a prompt reply:

"We have them in our selvages and in our arches. They build to the top of the plates, almost. Some of them jam in toward the top of the cylinder so that hooks won't remove them."

"What plates do you mean?"

"The knife plates."

"Wide or narrow?"

"Both. We don't notice much difference."

The discussion leader rephrased the question and asked it for the audience.

"Does anyone, who had his cards equipped with continuous strippers before going to metallic clothing, and who uses a wide plate to make up for the missing flats, notice any difference in chokes between those cards and ones with narrower plates?"

No reply.

"We use a special nozzle on our air hoses to blow out the chokes around the doffer." This came from a new participant.

"Who does the blowing?"

"Our card grinders."

"How often?"

"They get around once a week. We have divided the job among the three shifts."

As one spokesman finished his delivery and prepared to take his seat, the discussion chairman asked:

"Those who lock down their feed rolls, do you drive your licker-in with leather belts or with rubberized fabric belts?"

"We use leather, but why do you ask?"

TABLE 3. New-Type Flat Performance

Mill	Type	Grinding Frequency	Card Cloth'g Type	Flat Speed (inches/min)		Flat Setting		Cotton		Production (lb/hr)		Neps/grain	
				Before	After	Before	After	Grade	Staple	Before	After	Before	After
B	Metallic Split-top	About the same	Met.	3	3	— Same —		BM	1 1/16	9	9	— No Change —	
E	Split-top H-point	UD	Conv. Met.	3¾	2½	0.010	0.010	MCSLL SLM	1 1/16	— No Change —		Down 39/100 sq in.	
F	Metallic H-point Conv.	UD[1] 3 mos 2 wk	Met.	3	3	— — —	0.011[2] 0.011 0.011	M, BSL, SL & BLM	1 1/16 & 1 1/32	12.1	12.1	—	6.5
G	Metallic H-point	28 days	Conv.	3	3	0.010	0.010	M	15/16	10	10	15	15
J	Conv. Split-top H-point Short cut Metallic	22 days[3] — — — —	Met.	3	3	— Same —		LM	1 1/32	10.8	14.5[4]	110	70
K	H-point Short cut	10 mos[5] 5 mos	Conv. & Met.	3	3	0.010	0.012	BSLM	1 1/8	6.25	6.25	2.75	0.75
O	Split-top H-point	3 mos	Met.	2¾	2¾	0.009	0.009	BSL	1	— No Change —		— Down 19% —	
S	Short cut	UD	Met.	0.4	0.4	0.010	0.010	SLM	1	13	13	— No Change —	
T	Split-top H-point	UD	Conv. Met.	3	3	— —	0.010 0.012	M MCSLL	31/32 to 1	10 to 12	10 to 12	— Down[6] —	

[1]Flats not ground in the 3 months they have been in use
[2]Sets front stand 0.012"
[3]Other types not ground yet
[4]Since reduced to 10.8 because production is not needed
[5]Assumptions only. Flats have yet to be ground
[6]Conventional flats 13.7; others from 10.4 to 10.0

Legend:
H-point—hardened point
Conv.—conventional
UD—undetermined
Met.—metallic

"Do chokes throw the leather belts off?"

"Now and then one flies off, but we haven't traced it to chokes. We have very few chokes to go through."

The firms replaced or reworked doffer and cylinder journals (or had a supplier do it) that were to take on the new and more exacting load of metallic clothing. But only one gave wear limits.

Mill D replaced or reworked them if the wear had exceeded 0.003" and replaced scored ones. The shop at *Mill K* built up worn shafts with low-temperature stainless steel, turned them again to size, and had the clothing supplier to install them as he fitted the cylinders and doffers with the new wire.

Usually, fly increases at the cards after metallic clothing comes into play. But five plants either have no increase in processes following carding, or the increase is too slight for notice.

This bears out the results reported in TI for January, page 62, *Table 1*. There the picture drawn from the fall meeting of this group in 1960 shows a similar erratic finding.

Cotton quality and staple length seem unrelated to the amount of fly reported, although the exact opposite would be expected. Practically all the mills witnessing a change (or no change) use cottons in the Middling to Bright Strict Middling range in staples from 1" to 1 3/32".

Only nine of the seventeen mills using the metallic clothing report finding counts heavied from the drop in card waste.

Ten of the seventeen did not increase production; five did: and some preferred to up their quality and leave the pounds per hour be.

And only one plant, *Mill B*, believes (figures not available) maintenance costs are down. Reason: less labor and materials being used.

Needle-Point Grinding. Only three of the 20 mills had experience to give on this rather unconventional method of pointing card wire. *Mill G* points the wire on a 60-day basis and has not returned to conventional grinding between pointing cycles. There has been no reduction in neps, there is not enough experience to predict clothing life under the system, and there is no increase in production rate. Two other plants report the system to greater lengths.

Mill Q grinds on a ten-week cycle but has not returned to conventional grinding after a given number of rounds. Neps are down from 85 to 60 per 100 square inches of web; clothing life is estimated at 8 to 10 years; and production remains the same.

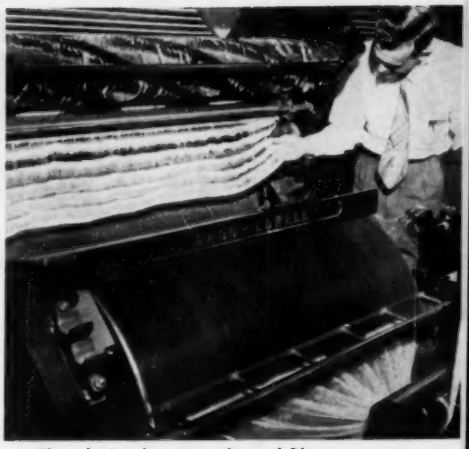
At *Mill T* the pointing is not done on a regular cycle. The firm ground until reaching the wanted condition and returned to regular grinding cycle. Neps are down 35 to 40%; and the life of clothing

Lanier — Carding

normally "worn out" is extended an estimated 12 to 18 months with a decided boost in quality. Production remains the same.

New-Type Flats. An 8-part question asking for performance on any new-type flat clothing tried brought several responses. The evaluations included the type of clothing tried (broken down here into split-top, metallic, hardened point, and short cut) and any changes in grinding, speeds, nep counts, settings, and production the new material brought about. Much of the material has been in use too short a time for thorough evaluation in grinding, but the results turned in may be found in *Table 3*.

Big-Roving-Frame Speeds. This question found only three mills



Flats don't take out much good fiber.

with experience with 12" x 6½" or larger fly frames running with spindle speeds of 800 rpm or higher. *Mill M* has new frames of 13½" x 7" size running at 750 rpm on 1⅛" SLM cotton. The 96-spindle units produce 1.25-hank roving, 4.90 pounds per package, with 1.50 tpi. The firm has four frames per operative.

The 14" x 6½" frames running 800 rpm at *Mill S* were "built to run this speed" and the mill has no difficulty in keeping them going at that rate.

The 12" x 6½" and 12" x 7" frames at *Mill T* run with spindle speeds from 820 to 900 rpm, produce 0.50- and 0.90-hank roving from 31/32" to 1" M and MCSLL cottons. The big frames took an increase in speed to offset added twist, but production remains at the starting figure. More bobbin gears are replaced at the high speeds and there is a slight increase in tangled roving.

(Look for the spinning report in an early issue.—The Editors)

Needle-point grinders.

nonwovens

materials, methods, marketing

Part 2—What they are and how they are made*

by James W. Howden
President
James W. Howden Co., Inc.
Ramsey, N. J.

Exclusive

NONWOVENS are pouring into the economy at the rate of 1¾ billion pounds and more than a billion dollars a year. We pointed that out in the opening article of this series. We also emphasized that the market for nonwovens is broadening rapidly. Not only do new nonwoven products keep appearing, but the industry constantly sends feelers into markets served by products of traditional manufacture.

For these reasons, some of the country's largest textile manufacturers have already entered the field, and others are launching largescale nonwoven operations.

Here we shall review some of the proposed definitions for nonwovens, and shall ourselves propose a generic term to describe this family of products, now grown to more than 1,000 members. Then we shall describe the operations basic to all nonwoven manufacturing, and present a list of the principal types of nonwovens recognized by the industry. Finally, we shall outline the product scope of each principal type of nonwoven, and discuss the operations used in making it.

What Is a Nonwoven? Efforts have been made to define nonwovens almost since the birth of the industry. Are they "a continuous web of fibers, treated or processed in a manner other than by knitting or weaving, which results in a strengthened construction . . . "? Or is ASTM closer to the mark when it defines them as fabrics "neither woven, knitted, or spun, but built up by the interlocking of fibers by chemical bonding agents, or of fusible fibers by mechanical work, chemical action, moisture and heat"?

Or perhaps this is better: "Continuous web, sheet or fabric-like materials composed of fibers which are mechanically and/or chemically bonded together and which are not made by weaving, knitting or other conventional textile processes."

It is apparent that these definitions tell us in some detail what nonwovens *are not*, rather than what they are. The very term, nonwovens, is definition by negation. Therefore, we shall attempt to describe nonwovens by pointing out that certain characteristics are common to all of them.

To begin with, they all are made from fibers—or at least, they contain a high percentage of fibers in their structures. And without exception, the fibers are "bonded" to hold the structure together. Although bonding may be mechanical or chemical, and the nature of the bonding agent may vary, the fact remains that bonding is an integral step in their manufacture. And as we shall see later, the method of making nonwovens and the method of bonding are the principal factors which determine the resultant nonwoven type.

Since bonding is common to all methods of manufacturing nonwovens, it is only logical that they could be more accurately described as "bonded fabrics," or as "bonded battings," depending on their density and intended use. One manufacturer of nonwovens, however, proposed that his products be referred to as "web textiles." But this doesn't seem particularly appropriate, since all fabrics are present in the "web" form at some stage of their manufacture.

For many years, in the Howden organization, we have used the term "nonwoven bonded fabric and batting," and we now propose that this generic term be adopted because it best describes the enormous variety of products in this category.

Basic Nonwoven Operations. In addition to the two inherent characteristics of nonwovens — that they are made of fibers and require bonding—there are certain operations basic to all methods of manufacturing them. There are seven principal operations, or functional centers:

Opening—of the fiber stocks.

Forming—the fibers into a web.

Impregnating—the formed web.

Preparing—the web for curing.

Curing—the resins in the impregnated web.

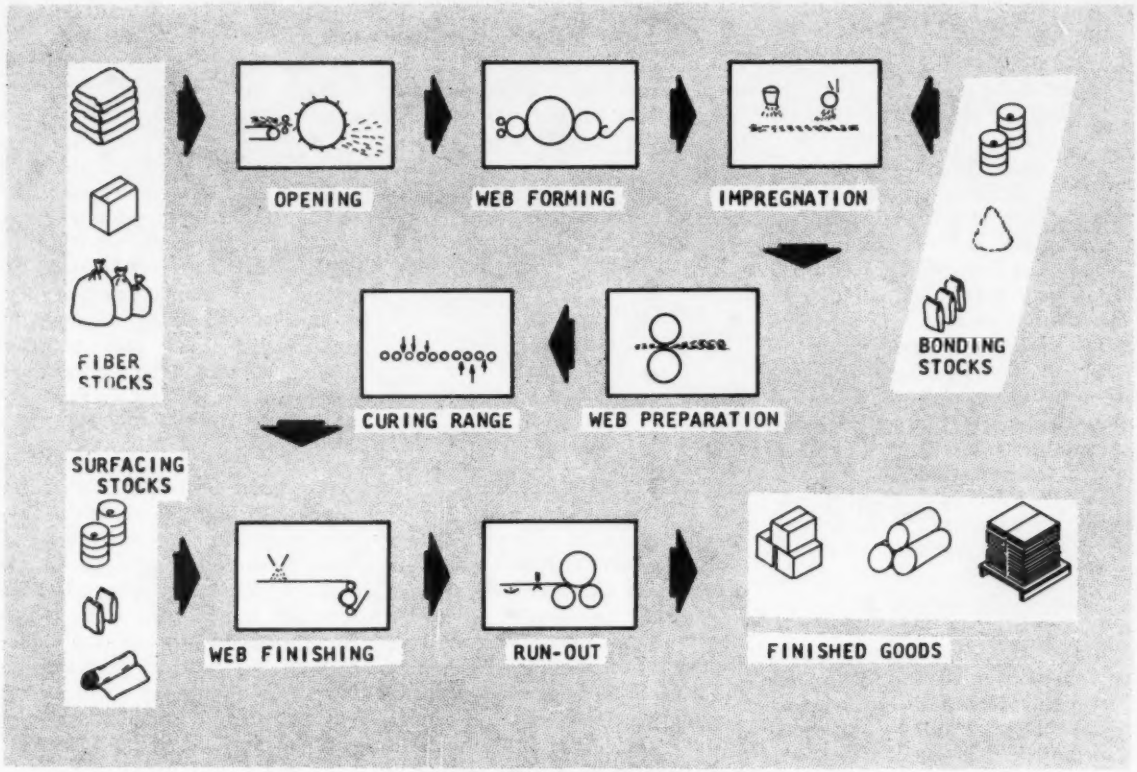
Finishing—the cured web.

Handling—finished web at the runout.

While these operations generally take place in the order shown, there are some notable exceptions. In the manufacture of fiber-bonded nonwovens, for example, impregnation can consist of blending the stock with reactive fibers in the opening operation. In later curing, the reactive fibers fuse under heat to bind the fibers. And in the papermaking method, the web is often formed and impregnated simultaneously. These exceptions, and others, will be covered in greater detail.

Opening. This operation may consist of a procedure as simple as manually opening and "breaking" a bale, separating and mixing the fibers on the floor with a pitchfork, and manually loading them into a picker from where they are conveyed to a garnett or other web-forming device. The operation

*Part 1 of this series was published in the October, 1961, issue, beginning on page 53.—The Editors.



Basic bonded web processing line.

may also include such elaborations as these:

Shredders
Beaters
Grinders
Aereators
Mechanical bale breakers and openers
Automatic blending feeders
Cleaners and openers
Remix blenders
Cone dusters
Automatic additions of resins, oils, waxes, and other chemicals
Automatic additions of by-products from other plant processes

After the stock goes through one or more of the above operations, it is usually conveyed to a picker, or to a picker-type machine, which further opens and blends the stock and then makes it into a lap or delivers it directly to a web former.

Although garnetts usually are regarded as web formers, they are sometimes used in the opening operations as a refined "pre-garnetting" or precarding machine to achieve more thorough opening and blending before web formation. In the opening operation, also, various chemical treatments of the stock can be carried out, such as leaching, bleaching, washing, and pulping.

Web Forming. This operation may require one or more of the following machines or devices:

Garnett
Card
Air collection webber
Air dispersion webber
Screen collector

As in opening operations, it may also include the automatic application of chemicals or of by-products from other plant processes.

Of the web-forming machines, the garnett is most widely used; the others follow in importance as shown. The screen collector is a very simplified term to use for a wide variety of machines and mechanisms of growing importance. For example, a traveling screen collector, used under a tower hood—in both wet and dry resin systems—is a primary web former for such products as chopped-strand, glass fiber plastic reinforcing mat, mineral-wool insulating batt, certain types of bonded cotton batting, and several other types of large-volume products. In Europe, the traveling screen collector, used in conjunction with an air dispersion webber, is gaining importance as a means of making textile-fiber papers and saturation-bonded fabrics.

A rotary screen collector, on the other hand, is widely used in the production of heavy-weight cellulose batting and paperboard. And of course the Fourdrinier machine, which is the basic means of forming wet webs in papermaking, is essentially a screen collector.

Impregnation. As its name implies, the function of impregnation is to put binder resins and chemical products into the web. The operation may be carried out by numerous methods, using various machines and mechanisms:

Powder spray
Immersion
Gravity drop
Solvent spray
Fiber premix

Vapor spray
Vibratory feeder
Rotor force feed
Liquid spray
Coating (16 types)
Printing

The binder resins may be applied at different points in the process line. Heat-reactive fibers, for example, can be mixed with the stock in the opening operation, as already mentioned. Similarly, chemically reactive fibers are mixed with the stock during opening and then sprayed with a catalyst in the feed box of the garnett before curing; or the catalyst may be sprayed on the doffed web on the run-out apron.

Dry powder resins are sometimes applied at the doffer roll of the garnett; sometimes at an intermediate point of the garnett; and, most commonly, onto the doffed web on the run-out apron.

Regardless of application method, the objective in nearly all cases is to deposit resin binder at a point where it will be uniformly distributed throughout the web. The point of application must also be selected to prevent the resin binder from falling out (as is possible when dry powders are used) or separating from the web, or adversely reacting with aprons and other parts of the range before curing.

Web Preparation. This is an intermediate operation between immersion and curing. It may be a simple one in which the web merely passes through a so-called "tin roll" to assume a more compact form. Or it may also include more elaborate and often more exacting steps:

Compression with 2-, 3-, 5-, or 7-roll matched sets
Liquid spray surfacing
Coating (16 types)
Stitching
Overlayering
Interlayering
Underlayering
Needle looming (needle punching)
Gravity drop surfacing
Hydraulic fiber-lay arrangement
Powder spray surfacing
Fulling
Hardening

Needle looming is actually a mechanical binding operation. It could be listed under impregnation and/or curing. But since it is often used with resin-application systems, it is listed here as a preparatory step. It has become tremendously popular today, primarily because of improvements in the machines, techniques, and resin systems used with it.

Curing. Of all operations in the process line, curing must rank as the single most important one. In essence, it is the "heart" of the line, directly influencing hand, drape, color, resiliency, and other quality characteristics of the product.

It is carried out in what is commonly known as a curing range. This consists of a chamber or oven, a conveyor, and a heating system. The web is simply conveyed through the oven, where it is heated at a desirable temperature for a prescribed length of time to polymerize, fuse, or set the resin system and thus bind the fibers. It also includes a cooling section at the delivery end to cool the goods to room temperature.

Five principal conveyor systems are in common use:

1. Mesh carriers
2. Contact drums (so-called drying cans)
3. Air carriers
4. Powered roll carriers
5. Perforated drum carriers

And there are five different heat generating-transfer elements, which are used in conjunction with conveyor systems. They use the following sources of heat:

1. Direct fired gas
2. Radiant gas
3. Direct-fired electricity
4. Radiant electricity
5. Steam

Many combinations of conveyor-heating systems are possible. In actual practice, these are the most common ones:

Mesh conveyor—radiant fired
Mesh conveyor — recirculating air stream
Drum contact—unsupported
Drum contact—single or double web supported
Air wipe carrier—radiant fired
Air wipe carrier—superheated steam (or airstream)
Roll conveyor—radiant fired
Roll conveyor—recirculating air stream
Drum carrier—radiant fired
Drum carrier—recirculating air stream

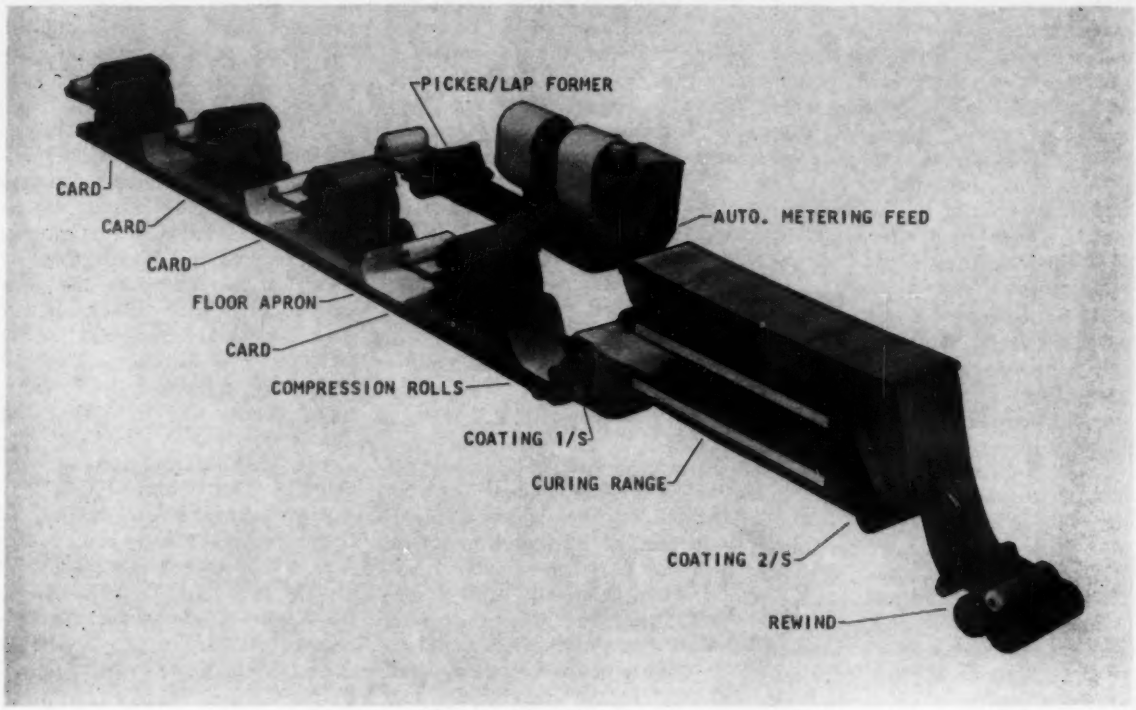
There are many less common, though equally successful, combinations of conveyor-heating systems. For example, indirect-fired gas, indirect-fired electricity, and super-heated air can be tied in with a drum contact conveyor; and radiant electric strip heaters in combination with heat transfer through a double web support over a heated drum are successfully used.

Finishing. Finishing ranks second only in importance to the curing operation. In some process lines, finishing consists of a simple passage of the web through matched compression rolls, which simultaneously control the thickness of the finished product and start or complete the cooling after curing. But web finishing may also include the following:

Singeing
Spray surfacing
Embossing
Ironing
High-pressure calendering
Overlayering (and underlayering)
Printing
Coating (16 types)
Shrinking
Brushing
Napping
Steaming
Stitching

Finishing may also be more elaborate. For example, the finished web may be laminated to another layer or web and simultaneously embossed. This is commonly done in laminating-embossing vinyl film to nonwoven backing.

Unlike finishing woven cotton fabrics, for example, there are no prescribed preparatory operations for finishing nonwovens. Though the preparatory operations used in cotton bleacheries may be carried out, they are not always demanded by a nonwoven fabric for satisfactory performance and appearance. If preparatory operations are necessary, such as boiling-off and bleaching, or if dyeing may be called for, conventional raw stock



Schematic model layout of a wadding-type nonwoven process line.

dyeing and processing equipment can most readily be used. Additional finishing steps can then be carried out after web formation.

It is in the area of finishing nonwovens, however, that practical research has been lagging. The present status of finishing has been compared by one of our associates to that of the woven cotton industry in the 1880s. Some highly significant progress must yet be made by the industry if nonwovens are to realize their full potential.

Handling. This final operation consists of physical handling routines which are required for storage and shipment. They include:

Inspection
Selvage trimming
Slitting, cutting, and measuring
Roll wind-up
Wrapping

Some plants have found it advantageous to combine other operations with handling, such as:

Coordinated die cutting
Splitting
Folding
Stacking
Automatic weighing, wrapping, and sealing.

Endless Product Variation. It is apparent from a discussion of the seven principal operations, or functional centers, that virtually hundreds of distinctly different nonwoven process lines or products can be created by simply altering fiber stocks, binder resins, processing variables, and finishing routines. Notwithstanding that such enormous flexibility in product manufacturing exists, the nonwoven industry recognizes only seven principal types of nonwovens, which are available in numerous variations.

The principal types are listed below in the approximate order of their appearance in history:

Paper types
Felt types
Batting types
Wadding types
Punched types
Fabric types
Combination types

If our list of principal types were to end here, classifying nonwovens would be a simple task. As it is, each principal type can be broken down according to the resin binder system, the method of applying the resin, and the finishing operations employed. One of the truly distinguishing features of nonwoven manufacturing is thus revealed: Out of a single, basic "mix," a wide variety of end products can usually be obtained.

So far, we have tried to emphasize that no single sequence of operations governs the manufacture of nonwovens. In some cases, certain operations are combined at one point in the process line; while in others, an operation may not be necessary at all because its function has been accomplished by another means.

With these principles of manufacturing as a background, we can now elaborate upon each of the seven principal types of nonwovens, and describe more precisely the operations in their manufacture and in what order they occur. From this discussion, we should become aware of the direct relationship between production techniques and the ultimate properties of the finished product.

Paper Types. As the paper-

making process is adapted to the manufacture of bonded fabrics, it consists first of reducing textile fibers to a relatively short staple length, and then mixing them with water containing a binder. This fiber-resin slurry is then pumped at a precise rate onto an endless traveling apron of fine wire mesh, which allows much of the water to drain from the web as it is being formed.

On extraction of water by compression and drying, a felt-like web is produced containing a small percentage of resin binder. Subsequent heating (curing) binds the fibers into a relatively light, low-strength bonded mat or felt of high loft. If this web is compressed as the resin is being cured, or if it is later calendered, the bonded fabric is relatively dense, high in strength, and of a low loft.

Generally, the strength of the product is in direct ratio to the net retained binder content and the degree of compression in curing. The degree of loft, or softness of hand, resiliency, and the like, are usually in indirect proportion to these same factors.

For several decades, now, the paper machine has been used to make textile-type papers, such as napkins, towels, toilet and facial tissues, draperies, and tablecloths. But it has only been relatively recent that paper technologists have added textile characteristics to these products through process modifications and use of synthetic binders. Such properties as wet strength, drape, and hand—just to mention a few—can now be achieved. As the variety of synthetic resins has grown, so in turn has the variety of textile-type paper products.

Thus many areas within the paper and textile industries now overlap. Result: The two processes are in direct competition with each other. Many paper products can be made by what in the past were considered textile manufacturing processes; similarly, many textile products are now being successfully made by what are properly classified as papermaking processes.

However, both industries have been swept by waves of overenthusiasm and excessive pessimism as reports are published and rumors are heard of the potential invincibility of the papermaking processes. But on the whole these reports have grossly exaggerated the capabilities of the papermaking methods—they can't be considered the ultimate paths to the production of all nonwovens. Despite its high productivity, papermaking is no cure-all, nor is it likely to displace other efficient ways of making nonwovens.

In a later article, we'll discuss in greater detail the papermaking processes and their relative operating economies.

Felts. The first felt made took advantage of the tendency of wool fibers to contract and curl under the effect of heat and moisture; so do most of those made today. Felt is a mechanically bonded nonwoven, using only the interlocking characteristic of the individual fibers themselves as a binding agent.

To offset the unfavorable features of wool—nonuniform properties and fluctuations in supply and price—felt manufacturers some years ago began to use chemicals and resins in their felts. These add strength, which permits the use of lower-grade poorer-felting wools. Chemical binders are also used to make lighter-weight, high-loft felts; to give such properties as abrasion resistance; and sometimes to give decorative effects.

These felts are known in the trade as "combination-bonded" nonwovens, since they use both the natural mechanical bonds of the fibers and the chemical bonds provided by resins.

Batting. Cotton batting is almost universally used in all types of upholstery, padding, bedding, and cushioning. Its production for these and similar purposes comes to nearly half a billion pounds annually.

In its simplest and most common form, batting consists of multiple layers of garnetted webs compacted loosely into a mat, or batt. It is usually formed by first cross lapping the garnetted web onto a floor apron, to give it desired weight, followed by passing the resultant lay-up through compression rolls to increase density of the fibrous mass and provide sufficient strength for handling. The batt is then rolled up on surface wind rolls or folded on a batt folder.

While batting is seldom recognized as a nonwoven, it logically belongs in such a classification—only minor modifications in its manufacture and construction will place it into the bonded batting classification. Moreover, its uses are identical to other newer chemical and fiber-bonded materials. It may also be pointed out that many of the so-called "fabric-type" materials, of thin and lighter-weight construction, are merely batting materials at one point in their manufacture.

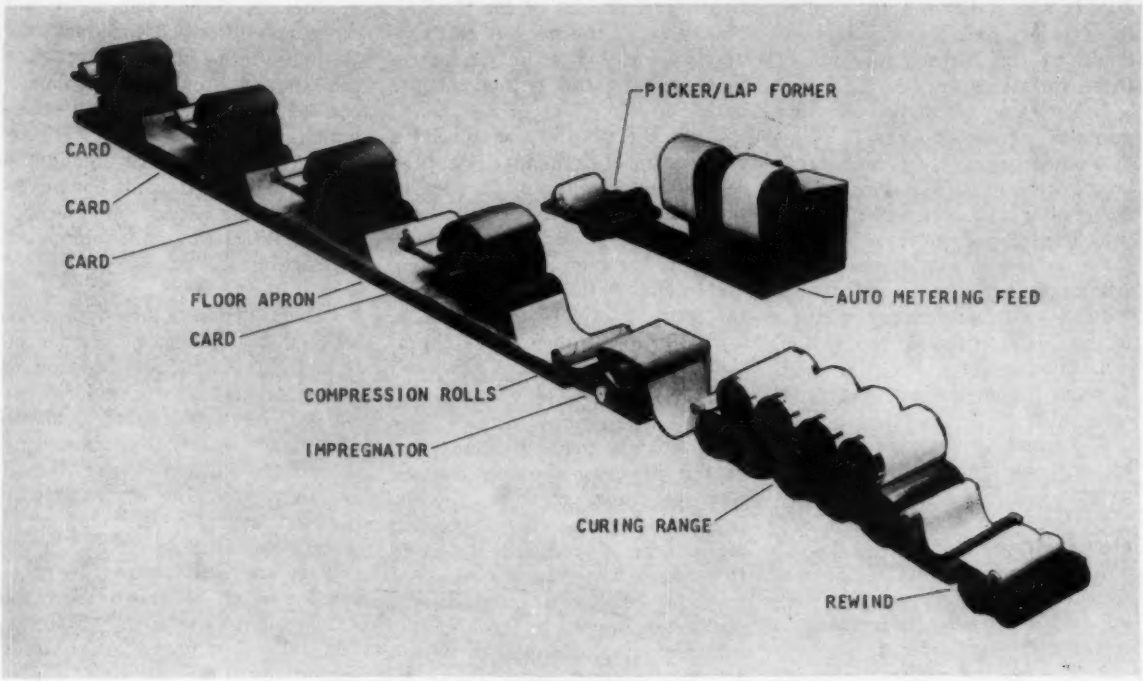
Any comprehensive analysis of the nonwoven industry must therefore include an accurate evaluation of this product, for it represents the largest single area of marketing opportunity.

Cotton batting, or cotton felt, is by far the most widely used of all nonwoven products. It is actually a mechanically bonded nonwoven since in its manufacture some interlocking of fibers takes place. Cotton waste still remains its chief raw material, greatly exceeding the consumption of wool and synthetic fibers. However, synthetic battings are gaining in usage very rapidly.

In recent years, the encroachment of other nonwovens and a trend toward competitive price cutting has brought a number of changes to the industry. To meet competition profitably, and to widen end-use markets for batting, a number of innovations have been introduced and basic changes have been made in the product to give it added functional and aesthetic qualities. Chiefly responsible for these improvements have been these:

1. The use of chemicals, resins, and bonding agents to provide the batt with innumerable properties, such as increased strength and resiliency, lower weight and high loft, chemical resistance, washability, and drycleaning resistance.

2. Combining batts with overlays, interlays, and underlays—of other nonwovens, conventional fabrics, or plastics—usually in a single-pass operation to create



Schematic model layout of the fabric-type nonwoven process line.

combination products such as vinyl upholstery integral with the high-bulk padding.

3. Enhancing surface appearance through printing, embossing, and the like to increase sales appeal.

Some new techniques in manufacturing have also been introduced through the development of equipment:

Air collection webbers
Air dispersion webbers
Hood formers
Screen collectors
Drum webbers
Continuous filament webbers

The use of these manufacturing techniques is growing very rapidly, partly because unusual fiber combinations permit numerous product variations. For the most part, the materials which are made by these methods are also chemically bonded and/or combination-bonded. Despite successful use of this newer equipment, the garnett and the cross-lapper remain the workhorses of this industry.

Wadding. The development of the wadding industry in this country began more than a hundred years ago when a mechanized textile industry made available an abundant supply of cotton waste. On the whole, progress in the manufacture of wadding has been slow. Aside from very gradual refinement of mechanical equipment and the recent growing utilization of resin binders, the operation has seen little change in more than a century.

In its most common form, the wadding process line has multiple sets of cotton cards, arranged for tandem operation. Each set of cards delivers a web of fibers onto a floor apron, which also runs in tandem underneath the other cards. The numerous webs are then combined to build up a batt-like fabric in which all fibers are essentially parallel to each other. The number of cards in the process line plus the rate of production per card determine the ultimate weight of the wadding.

The web then passes through compression rolls and over (or under) a coating roll, where a liquid starch or a resin binder is applied to one of its sides. The web is then conveyed through a curing range where the coating is dried to impart strength, hand, and other characteristics.

A common variation of this process is to reverse the direction of the web at the delivery end of the curing oven, then coat the other side of the web, and then re-enter the web into the drying oven to create a fabric with identically finished surfaces. The finished product is best known in the trade as "glazed wadding."

The cards are conventionally supplied with stock in the form of a heavy, matted batt, or picker lap. As many as 30 cards have been used in a single process line to create what actually amounts to a heavy-weight, batting-type of wadding. The width of the cards determines finished width of fabric since it is usually left untrimmed. Thus, wadding fabrics characteristically have irregular edges.

In nearly all wadding production, waste stocks are used rather than virgin fibers. The grades of waste used vary widely from the best to the poorest; conventional wadding fabrics are usually a combination of several grades of waste.

In recent years, numerous processing variations have been intro-

duced, which have been applied in greater and lesser degrees. Some of the more important of these variations are:

1. The use of high-production garnetts in place of cards.
2. The use of cross lappers to create webs of various widths having greater unidirectional strength.
3. The use of spray heads and other devices in coating operations —to apply both single and double coating—with subsequent splitting of the fabric to double production.
4. Elimination of the lap through automatic metering feeders.
5. Formation of a composite web by one machine rather than by many.
6. Use of direct-fired gas and electric drying ovens.
7. The application of decorative cut-outs, and the use of printing and embossing techniques to create aesthetic surfaces.
8. The use of numerous resins and starch-resin combinations to achieve improved properties in the finished fabric.
9. Displacement of cotton in many areas of the industry with wool and synthetic waddings, thus creating distinct categories of products, such as cotton wadding, wool wadding, acetate wadding, and combinations of these and others.

Punched Fabrics. The operation of making punched fabric is also often called needle punching or needle looming. Essentially, it consists of passing a loosely-compacted batt through a needle loom or needle punch, whichever you prefer to call this machine, in which the loose fibers are compacted, densified, and intermingled to form a relatively dense, felt-like material. (Since there is a needle loom used to make narrow fabrics in the conventional woven goods industry, the term as used here is probably in error—nonetheless, the name has grown in common usage in the nonwoven industry.)

The densifying action in a needle punch is the result of thousands of needles, having inverted barbs, reciprocating rapidly up and down through the batt, with the batt intermittently moving forward through the machine between each stroke of the needles. The barbs of the needles catch fibers on top of the batt and push them toward the bottom of the batt.

Since the needles are spaced a distance apart in the machine, they catch and punch only a part of the fibers. The action of these fibers in being forced down through the batt, however, pulls, ties down, and interlocks the rest of the fibers to form a relatively compact, strong web or fabric. This operation is one of the more advanced types of mechanical bonding.

The batt supplied to the needle punch may be made by almost any of the dry web-forming devices, such as cards, garnetts, air dispersion webbers, etc., depending on the type of product it is desired to produce. The type of fibers that may be processed on a needle punch are limited to those having sufficient staple length to permit effective mixing/compacting in the machine. Needle punched products in common use today are made from such diverse fibers as cotton, Dacron, jute, nylon, rayon, sisal, and wool.

While the needle punch was first developed in the last century and refined to essentially its present functional design in the few years thereafter, until recently its use was confined principally to coarser, lower-grade fibers and low-cost end products. Hundreds of millions of yards of rug cushions, mattress insulators, hair felt, and carpets in use today attest to the effectiveness of this production tool. In recent years, manufacturers of both the machines and the needles have contributed substantial improvements to the process, so that today needle punching is in increasing demand for the production of a wide variety of end products.

Also, as in the case of other nonwovens, the scope and variety of punched fabrics has been considerably expanded in recent years through supplementary chemical bonding, surfacing agents and coatings, interlayers and backing fabrics, embossing, combining with other nonwovens and plastics, decorating, and the like—all to enhance the physical properties, utility, and appearance of the product. A recent patent in this direction described product advantages to be gained through a combination of thermoplastic-bonded wadding and needle-punched overlayer.

Punched fabrics are among the most widely used of all nonwoven fabrics, being second only to conventional batting in volume of production.

Fabric Types. Fabric-type nonwovens are generally considered to be light-weight, relatively dense constructions (usually under 6 oz/sq yd), having draping qualities and hand closely approximating woven and knitted fabrics. Usually, they are also comparatively high in strength in relation to weight and density.

They are manufactured by processes similar to those used for light-weight waddings, battings, and felts; but there are notable exceptions in the method of applying resin binders, in curing, and in finishing.

Three principal methods of bonding are used:

1. Fiber binders
2. Saturation bonding
3. Spray bonding

Sometimes two of these systems are used together in a process line; in rare instances, all three methods may be combined to create special effects in the fabric.

While one of several curing ranges may be used, the drum contact curing system is most common, in either unsupported, single web supported, or double web supported systems.

As already brought out, one of several web forming methods may be employed. In some instances, fabric-type nonwovens can be made on papermaking machines, and certainly can be made of carded and garnetted webs, or of air-doffed webs. At some stage of their manufacture, they may resemble paper, felt, batting, or wadding. Again, the principal determination of fabric type is the weight vs density vs specific bonding employed and method of finishing.

More than any other nonwoven, the fabric type has received most of the favorable publicity. (Though it must be admitted that it has al-

so received some unfavorable publicity.) Because of the exceptional flexibility that can be incorporated into fabric-type process lines to increase the versatility of the finished product, these nonwovens have grown at a remarkable rate. Their markets are currently doubling in volume every three years and give every indication of maintaining this phenomenal rate.

Of more than a thousand products currently being made from all types of nonwoven bonded fabrics and batting, over 300 fall into this type alone. The products include such diverse constructions and compositions as interlinings, wall coverings (reinforced plastic) for ICBMs, air-supported warehouses, drapery fabrics, and disposable towels.

Combination Types. Many nonwoven bonded fabrics and battings are manufactured by a combination of two or more operations. These are known in the trade as combination-type nonwovens.

An example is the mattress insulator, a needle-punched fabric of sisal fiber, roller-coated, spray-coated, or saturation-bonded with a latex compound, and then cured. Thus, in part, its manufacture simulates the wadding process. Another example of a combination type is a wool felt coated with latex compound and then pressed, calendered, or embossed.

There are some products which are manufactured by a combination of four different methods. It is obvious then that the combination-type category is necessary.

Which Fabric? Which Process? We have emphasized again and again that nonwovens offer a flexibility far greater than woven and knitted fabrics. But this very flexibility can be a pitfall; it can lead to unsound decisions in selecting a nonwoven type for a given application and in designing the process line.

Don't make your selection solely on the basis that raw materials, machinery, and space are available —or that some other "utilization" advantage may be gained. Rather, make your selection after careful study of many factors; market feasibility, marketing areas served, inventory-sales financial requirements, seasonal operating characteristics, sales organization available, competitive industry practices and patterns, consumer industry growth patterns, government or industry specifications standards, comparative potential operating profit ratios, and the like.

It can't be stressed too much and too often that accurate evaluation of these factors is a must in getting into nonwovens. In a later article we shall discuss them in detail, and spell out their relationships to various nonwoven operations.

(Part 3 of this series on nonwovens will appear in an early issue.—The Editors)

Survey shows inroads by synthetic ropes in New York Harbor

■ THE TWO largest fleet tug-operating concerns serving New York Harbor—Moran Towing & Transportation Co., Inc., and McAllister Bros., Inc.—are in agreement that synthetic ropes, and particularly those made of polypropylene fibers, have made remarkable inroads in the marine industry.

In the short space of four years, according to a survey of the two firms made by Dawbarn Brothers, Inc. (producers of polypropylene fibers used for ropes and cordage by the marine industry), synthetics have captured most of the older markets and have opened up new markets never before available to manila and sisal.

Rod McAllister, who is purchasing agent for McAllister Bros., believes that it was simple "dollars-and-cents logic" that won over the marine industry to synthetic ropes. "It is only about three years ago that we put polypropylene lines aboard our first harbor tug for testing. At the time, I'd guess the Harbor was about 90% manila. The switchover hasn't been complete, but today certainly 80% of the harbor boats use *some* polypropylene, and our own tug fleet is almost 100% converted to the new ropes. We keep putting them on board as quickly as the old lines become unusable."

Captain Leonard Goodwin, marine superintendent in charge of operations for Moran Co., agreed that the Harbor now is about 80% in synthetic fiber lines. He added, however, that Moran isn't completely "sold" on 100% polypropylene in all its ropes, as is McAllister. "Our ropes are primarily a combination of the synthetics. We like one in particular that has a nylon core, with polypropylene for a second layer, and Dacron forming the outer covering strands. This combination rope we use now on most of our harbor work seems to bring out the good qualities in all of the synthetics."

Captain Goodwin recalls that the first synthetic line ever used by Moran was all-Dacron. "We had it on the tug for more than two years before it began to show any real signs of wear. Over all, I'd say that our synthetics last at least three to four times longer than the old lines did—and in some cases we've had them on a tug as long as twelve months after we had thrown away the natural lines."

Comparison of these towlines demonstrates the extraordinarily long life which can be expected from synthetic ropes by the marine industry. Natural fiber line at left has been used aboard the "Ellen F. McAllister" tug for nine months and, while it does show signs of wear, is still without a break or splice. Line on right (polypropylene) looks untouched despite three weeks of hard service in the harbor.

EASY EVENNESS

3-process drawing upped roving evenness 1 to 1.5 points

Staff prepared—Exclusive

EVER WANT a return to the good old days? For good reason Russell Manufacturing Company, Alexander City, Ala., did. It has reached into the past to pull out three-process drawing, only this time the drawing is done in modern, high-speed fashion using the big frames shown below.

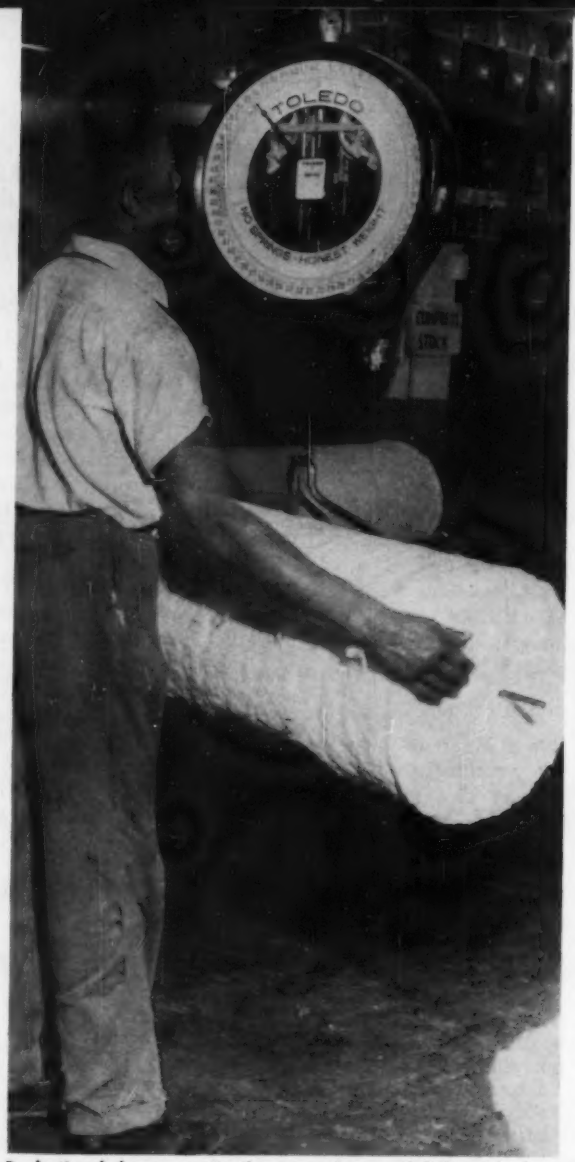
Russell wanted to add a few doublings to up the quality of some of their carded knitting yarns. The spinning would not take double creels of the 84-oz roving packages . . . but in some of the major mill changes to be made in Mill No. 2, room could be found for more drawing. And drawing makes doublings so economically . . .

If you should try it, Russell suggests you don't run one sliver weight across all three lines. Their laboratory found a long-term variation that looked suspiciously like roll patterning and which hung on until some weight tinkering made it go away.

"We made so many drawing changes we don't know which corrected the unevenness," says Bruce Allen, superintendent of the knitting yarn mill. We still use the organization we were on when the patterning disappeared."

The organization he refers to is 8 ends of 50-grain sliver in the first creel; 7 ends of 55-grain in the second creel; and 8 ends of 55-grain in the finisher creel. Final sliver weighs 60 grains.

While plant modification still goes on, some of the progress to date is shown on these two pages.



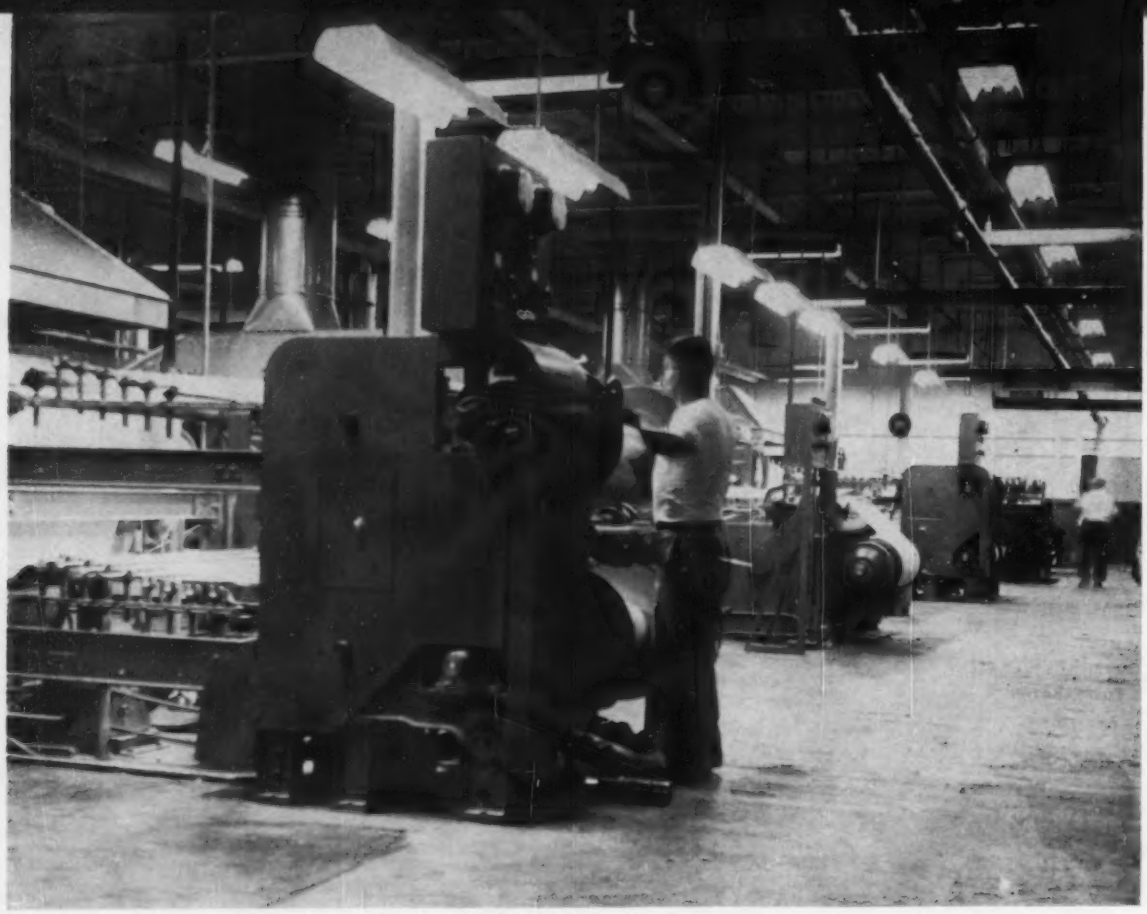
Production balance permits the economic use of lightweight laps.

Parts of the card room had to be shuffled to gain space for the added drawing lines. Cards sort and clean fibers from easy 6.5 pounds per hour to a more brisk 12, depending on quality needs.

Three are fitted with metallic clothing for performance studies. Each odd hour card tenders doff 1/3 their jobs (18" x 42" cans) to cycle with drawing tenders' hourly doffing the 16" x 42" cans.

A new opening room has 100-bale mix for regular stock runs (top) and a 60-bale lot for weighing-blending line handling napping-yarn mix.

Russell spins 5s through 26s, averages about 14s, at the No. 2 mill. And though several drafting systems are used, the spinning shown here is the mainstay. Operatives creel in as much on each doff as they take out, and yardage counters on draw, fly, and spinning frames keep the block-creeling run-out under tight control. Spinning doffers do own creeling, set in twenty bobbins each cycle.



Georgia mill men swapped slashing and weaving info. A big topic . . .

How wet to leave sized warps?

Staff report

THE FALL meeting of the Textile Operating Executives of Georgia got under way promptly at 9:30 a.m. on October 14 in the Hightower Auditorium at Georgia Tech. The men were there to air their slashing and weaving problems—and to see Tech belt the daylights out of Duke that afternoon.

Secretary - Treasurer **James L. Taylor** opened the meeting and turned the program over to retiring General Chairman **Lee Wynn.** He introduced **Tom Sherrill** as the slashing discussion leader and announced that **Henry Walker** would lead the weaving talks. Mr. Sherrill took the stand and read the first question:

Multicylinder Slashers. Mill trouble on multicylinder slashers is represented in a four-part question beginning with:

How do you correct for excessive moisture in loom beams?

Among the 13 mills reporting on this topic, only one, *Mill J,* discusses trouble with loom beams being too wet. The condition arises when the plant is running coarse numbers at high speeds. At such times the moisture indicator suggests a far drier package than the slasher delivers. *Mill L* has the trouble, but does not enlarge on it.

A third member, *Mill B,* is not plagued with it, but the plant notes that controls sometimes fail to act fast enough to cope with an unusual condition such as steam failure.

Do you find moisture in the loom beam at the slasher to be the same as at the loom?

At high speeds *Mill B* finds the moisture controls indicate a far wetter warp than the slasher is turning out. The inaccuracy may be as much as two per cent, with the indicator drawing attention to seven per cent while the slasher slips through another five-per-cent loom beam. At slow speeds the controls tell fewer fibs, indicate contents that are about correct.

One firm notices a slight disa-

greement between slasher room and the weave room, but the variations go up and down, cancel dry against wet until the final average is okay.

Mill F witnesses a loss of moisture between the slasher and the loom. A couple of plants report a brief "yes" on the question; a couple do not make checks that would show up any such changes. And *Mill L* gains four per cent between slashing and weaving.

How important is cooling the yarn coming off the cylinders before it is run on the beam and what method do you use?

The mills consider yarn temperature important, though none offers a temperature figure as a norm. A couple of the plants point out that too-hot yarn carries with it the property of sticking or clinging in the stored beam, mildewing, and poor shading.

A third plant, *Mill P*, is equipped with four-blade paddle-type fans under the slasher head, notices the fans allow slasher speeds to increase three to five yards per minute. Two of the plants report taking no special steps to cool the yarn, and neither reports if fans are in use. All others do.

Mill B has a fan positioned in front of the comb, but notes a slasher speed of 100 ypm does not promote overheated yarns; *Mill C* directs the blast from a 16″ oscillating fan onto the sheet as it leaves the cylinder, uses a stationary 20″ one on the yarn as it approaches the production roll; *Mill H* uses three, one immediately over the slasher comb to hit the sheet at the first split rod, two positioned 8 feet in front and boring into the sides of the sheet; *Mill L* uses four oscillating fans in the front; and *Mill R* uses two 24″ ones in the front to keep the lease and split rods cool.

What do you consider the proper per cent of moisture to leave in warp-sized yarn?

The plants responded "to a man" but did not give reasons for choosing the figures they report. The range is from 5 to 7.5% and the average is near 6.5. *Mill H* prefers 7 to 8% on sheetings, 6% on the heavier sleys.

Static. Seven firms reported. In five of them the moisture is kept at a level high enough to keep the charges broken up. One uses a standard commercial static eliminator on each slasher, and one used a cork-covered delivery roll. Perhaps the moisture *Mills J* and *R* leave in their yarns, 6.5 to 7%, explains their not having the problem.

General Chairman Wynn

Sherrill — Slashing

Election Results
General Chairman—Charles Pease
Vice-General Chairman—Henry Walker
Executive Committee—Robert Franklin

Stretch Meters. A simple majority of the plants use a stretch meter of some type. One has slashers equipped with built-in determinators.

Maintenance among the meters poses very little difficulty. A few cases of electrical failure (*Mill F* seems the most plagued, comments "Impulsers are always bad") and ratchet wheel wear just about make up the bulk of it. The plant with the built-in determinator reports some maintenance is needed, that the unit is not designed for heavy duty and is not 100% reliable.

The amount of stretch varies slightly from plant to plant and from style to style, with the range

A conventional paddle fan that increases drying speeds by 3 to 5 yards per minute. The sheet passes around a special roll to increase the yarn area exposed to paddle action.

NEW

AMERICAN MONORAIL Roving Frame Cleaner

the ONLY Cleaner with INSTANT AUTOMATIC AIR CUT-OFF Anyplace over the frame . . . .

When roving frame stops, air from cleaner stops instantly regardless of position of cleaner. Cleaning resumes when cleaner passes over the next operating frame. This instant cut-off prevents doubling, roving breaks, roving stretch between front and flyer cap, sliver breaks and shredding. Your yarn quality goes up as soon as you install this cleaner.

A famous mill, where this new cleaner is in operation, reports a 70% decrease in slubs introduced during this operation. This permits closer spooler settings and results in higher quality yarn. 80% of normal manual cleaning is eliminated.

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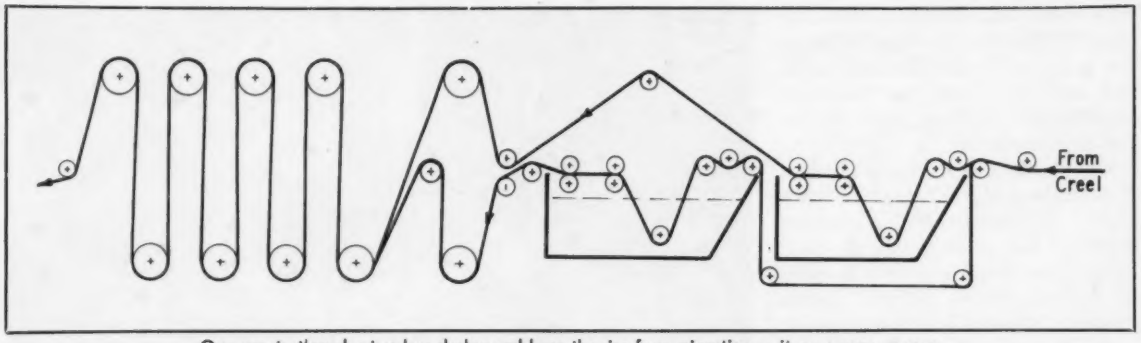


One way to thread a two-box slasher and keep the size from migrating as it converges on cans.

being from 1% to 2.5%. Specifically: *Mill H* stretches its sheetings 1%, its gabardines up to 2.5; and *Mill P* uses 1.5% on Type IV twills.

Squeeze Rolls. Pressure on the squeeze rolls gets a different sort of check in just about all the mills. The self-weighted rolls are not checked; air pressure is read out to get the force on the air-loaded ones; and one firm uses carbon paper to give the reading.

Still another method came from a representative who volunteered that his firm checks size content or pick-up at four or five places across the slasher width and uses the findings to pin-point misalignments, etc.

Colored Yarn Stretch. Only two firms answered with a breakdown on how much stretch they apply to 40s colored yarn. These are *Mills L* and *P*, and their respective replies to the five-part question are: stretch from size box to nip roll on front, 1 and 0.5%; from back section beam to nip roll, 2 and 1.9. The first firm uses dry section beams, the second wet. Both use can predryers, not driven in the first case and driven in the second.

Quality Control. Actually, this is more correctly waste control, since the discussions center around ways to minimize the slasher thread waste. And there is just about an even split (a few more prefer soft waste over hard) between those sizing the pulled-over yarn and those who leave it soft. One of those who leaves it soft points out the price of soft waste is higher than sized waste.

Some mills find waste goes up if they size wide warps before they pick them.

Practically all firms use control measures that allow waste to be traced to origin. Among the measures are strict section-beam yardages, separation of waste into categories, and posting charts showing waste made by each operative.

Mill C prefers to pick unsized yarns if the warps are dyed deep shades. Otherwise, roller marks show up. The firm prefers to size and pick the undyed sets.

At *Mill G* the pile yarns get sized, then picked. Ground yarns get opposite treatment.

On the towel slashers at *Mill U* the top warp is sized and picked in. But on the bottom warp and on ticking sets with heavier size, the yarn is pulled over and picked soft. And at *Mill V* the widest warps are not sized and picked, since the size cannot be kept in the box long enough for the wide ones to be picked. Narrower ones are sized first, then picked.

Plied Selvage Yarns. Two-ply selvage yarns, when run with single-yarn warp, get a variety of treatments. At *Mill A* they are separated from the body by a comb placed between size box and first cylinder and are sent through the dry cans a little apart from the singles. *Mill B* runs them under both squeeze rolls and through the cans. *Mill C* doesn't size them. *Mill F* dries them as singles. *Mill G* runs the ends over the size box, never wets them. *Mill L* uses two infra-red lights that go out when creep speed is selected. *Mill M* introduces the selvages from a creel at the front of the slasher, never

wets them. Ditto for *Mill N*. *Mill O* runs them under the back squeeze roll only, not under the immersion roll, and lifts them over the front squeeze roll with a comb and a Teflon-coated roll.

On multicylinder slashers, *Mill P* dries two-ply selvages as warp body, on three-cylinder models doubles the selvage yarns back around the small cylinder. And on its hot-air slasher, *Mill V* treats selvage yarns as body yarns.

As the talks began to show so many variations in drying practices, Discussion Leader Sherrill quipped: "One would think the best way to dry yarn is not to wet it."

This brought a ripple of mirth, and someone seized the moment to ask: "Why do you size plied selvages?"

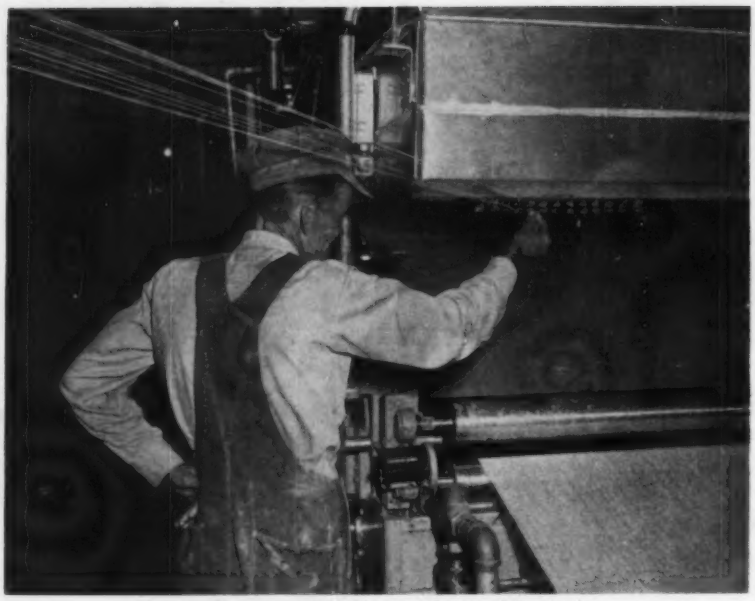
"We have tried it on our print cloths and find it just runs better."

"We have too," supported another.

"What yarns do you use in them?"

"30s two-ply."

"We use 38s two-ply, and we spread it out among the body ends."



Some prefer to run plied selvage ends around the size box.

Speed and Size Pick-Up. Difficulty with size pick-up varying from creep to running speed is spotty, but as *Mill B* points out, "It is enough to give trouble." At that plant it varies from 3 to 4%.

The most popular remedy reported is the use of valves that can be preset to ease up on the roll load at creep speed. One plant observes that, while its pick-up didn't vary, creep speed can cause scorching if prolonged. Of the 10 mills answering this topic, though, 7 report having no trouble with it or having variations in the 1% range.

Mill P finds its creep speed pick-up on 5500 ends of 24s yarn to be 10.7% against 13.7% at running speed.

(Look for weaving report in an early issue.—The Editors)

Technical developments *(from page 25)*

under terms of a 10-year pact. Goodyear will furnish know-how for the design, construction, and start-up of a 10-million-lb a year plant to be built in Japan.

Polypropylene for Japan. Montecatini Co., Italian producer of polypropylene, has completed licensing arrangements with six Japanese companies to produce its isotactic polypropylene plastic and fiber.

Hat Fibers. Hat Corp. of America and Union Carbide Chemicals Co. have entered into an agreement to develop new fibers and processes for use in men's hats.

FABRICS AND PRODUCTS

Floating Swim Suits. A Honolulu firm is making swim suits which support the swimmer in the water, using U.S. Rubber's Ensolite (a spongy plastic, composition not revealed) as an inner shell.

Polyester Double Knits. Milliken Woolens, Inc., is marketing double knits of 60/40 Kodel and wool, claimed to be the first such fabrics to feature a polyester fiber.

Self-Supporting Stocking. A patent has been issued on a stocking and manufacturing method whereby the stocking is supported on the leg without the use of garters. A coating of a relatively high coefficient of friction is applied to the inside upper end of the stocking. The yarns are cemented together in that area, preventing runs and rolling.

Spandex Support Hosiery. Bauer & Black is said to be test-marketing a seamless support stocking of a spandex fiber, retailing at $5.95.

TEST METHODS

High-Speed Tester. New tester developed by Fabric Research Laboratories can measure tensile properties of fibers at elongation rates greater than 1 million per cent per minute—said to be within the range of velocities and strain rates that fibers undergo during processing.

the only fiber of its kind...made today...and made by Du Pont...

"Orlon Sayelle"* bi-component acrylic fiber is an entirely new technical breakthrough in synthetics. □ "Orlon Sayelle" is an important advance in fiber aesthetics and service. It offers new fabric depth, greater fabric elasticity, rich fabric hand. It is easy to wash and dry—ideally, by machine. And it keeps its shape for the life of the garment. □ "Orlon Sayelle" is a bi-component fiber. What makes it unique is this: *it has a permanent, random, reversible spiral crimp.* This provides fabrics with luxurious beauty, excellent cover and compressional resilience, improved bulk and loft. *Plus* easy care. □ "Orlon Sayelle" was developed by Du Pont Research. Here is why...

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Scientists have noted that spiral crimp in apparel fibers can be most important in determining fabric properties. Du Pont researchers applied this basic fact to fiber technology. They combined two separate acrylic fiber components...

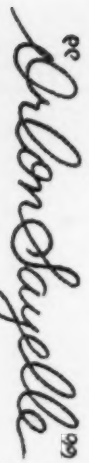
...into one. The result: "Orlon Sayelle" bi-component acrylic fiber. When treated with heat and moisture, "Orlon Sayelle"...

...develops a random spiral crimp. In other synthetic fibers, crimp is imparted mechanically. And, with the tensions of textile processing, some of this crimp...

*Du Pont's registered trademark for its bi-component acrylic fiber.

...tends to pull out. It cannot be regained. When "Orlon Sayelle"* bi-component acrylic fiber is scoured or dyed at the boil, it develops...

...a new crimp. When dry, this crimp becomes permanent, random, reversible and spiral. This is the special advantage of "Orlon Sayelle". Each fiber...



...bulks independently, producing unusual elasticity and recovery. Reversible crimp protects the size and shape of garments, washing after washing. The resilience and springy hand are maintained... With "Orlon Sayelle", you can offer all these benefits plus color versatility, luxury, comfort and easy care (machine-wash, machine-dry, automatic reblocking). "Orlon Sayelle" runs with excellent mill efficiency. It is available in tow and staple form. It can be spun, dyed, knit or woven on standard equipment.

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TO SPINNERS, KNITTERS OR WEAVERS. "Orlon Sayelle" offers these advantages and economies: improved cohesion in processing; reduced fly, therefore, less mill contamination; less waste, more yield; increasing economy as you work with it. □ TO THE CONSUMER ON THE BRINK OF A BUY. "Orlon Sayelle" offers texture she can appreciate at a glance; a richness she can touch and enjoy for the life of the garment; full color range; lasting satisfaction in wearing *and* washing; matchless easy-care benefits. □ TO ALL WHO WORK WITH IT. "Orlon Sayelle" offers a powerful promotional advantage. Du Pont is providing extensive advertising support, directed to the trade as well as the consumer. This fall, there's an exciting commercial for men's and boys' sweaters on the "Du Pont Show of the Week"; ads for men's sweaters in Vogue; an ad for boys' sweaters in the Ladies' Home Journal; local newspaper ads for women's sweaters in top metropolitan centers; ads for women's sweaters and knit ensembles in Vogue, Town & Country, Harper's Bazaar; and an ad for children's knits in McCall's. □ And that's only the beginning! For 1962, Du Pont has planned a massive marketing and advertising program (including newspaper and magazine ads and network television commercials). This campaign is designed to promote "Orlon Sayelle" as a leading apparel fiber in women's and children's sweaters; men's and boys' sweaters and sweater shirts; men's, boys', girls' and children's socks; men's and boys' tailored clothing; pile fabric linings; and coat shells. □ Du Pont is proud to present this latest member of the family of "Orlon" acrylic fibers. Count on "Orlon Sayelle", in the year to come, for new opportunities in styling, practicality and profit for *you!*

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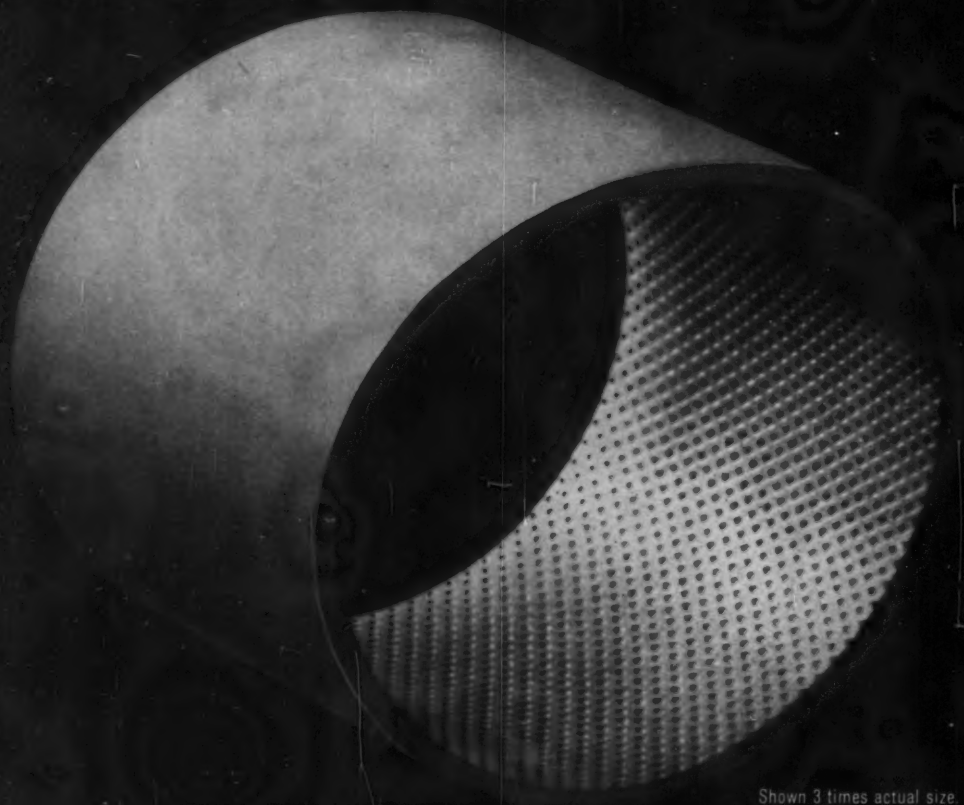
Better Things for Better Living ... through Chemistry

"Orlon Sayelle"®
BI-COMPONENT ACRYLIC FIBER

Enjoy the "Du Pont Show of the Week", Sunday nights, NBC-TV. *Du Pont's registered trademark for its bi-component acrylic fiber.

Now every Dayco apron is better 5 ways!



Shown 3 times actual size.

NEW: DAYCO PATENTED EMBOSSED APRON

1. Freedom from stress greatly reduces checking, cracking, and other wear.
2. 50% less drag, with related reduction in horsepower.
3. Self-cleaning in operation.
4. Perfect tracking, as a result of embossed "tread."
5. Helps keep quality standards high.

New embossed inner surface makes Dayco

Now every apron Dayco makes is designed with a new superior embossed inner surface—for longer apron life and outstanding performance.

For many years, Dayco compounds have been steadily improved. At the same time, Dayco engineers have been concerned with reduction of stress on aprons in use. Now an entirely new embossed inner surface, exclusive with Dayco, provides that reduction. Here's the story, based on controlled tests and actual mill use.

Dayco embossed aprons have less material in contact with the nosebar, which means less compression and distortion of the apron as it turns; less checking and cracking.

Smoother tracking, with better grip and less slip, is a second plus this patented inner surface provides. There's a seeable improvement in drafting action, and evenness of yarn, too.

Each Dayco apron cleans as it runs, thanks to that special inner surface. Down-time for cleaning idler rolls and nosebars is practically eliminated. And, with only 50% of apron surface in contact with driving parts, far less horsepower is required to operate Dayco-equipped frames.

Shown 3 times actual size.

OLD: CONVENTIONAL APRON

1. Stress at nosebar leads to early wear and deterioration.
2. Full measure of drive power required.
3. Regular cleaning essential.
4. Occasional slipping and chattering.
5. Can hold down quality of yarn produced.

the most durable, efficient apron you can buy

Dayco aprons — with the same fibers on the same frames — outperform other aprons by a margin that shows up plainly in profit and production records.

Ask your Dayco representative for help in putting this outstanding new apron to work for you. For further information, write or phone Dayco Textile Products, 401 S. C. National Bank Bldg., Greenville, S. C. Overseas Plant: The Dayton Rubber Co., Ltd., Dundee, Scotland.

Other Dayco products for the textile industry—all produced with the same careful attention to satisfying your needs—include: cots, roll coverings, slasher rolls, loop pickers, drop box pickers, lug, hold-up and harness straps, bumpers and sweepsticks.

Dayco
TEXTILE PRODUCTS
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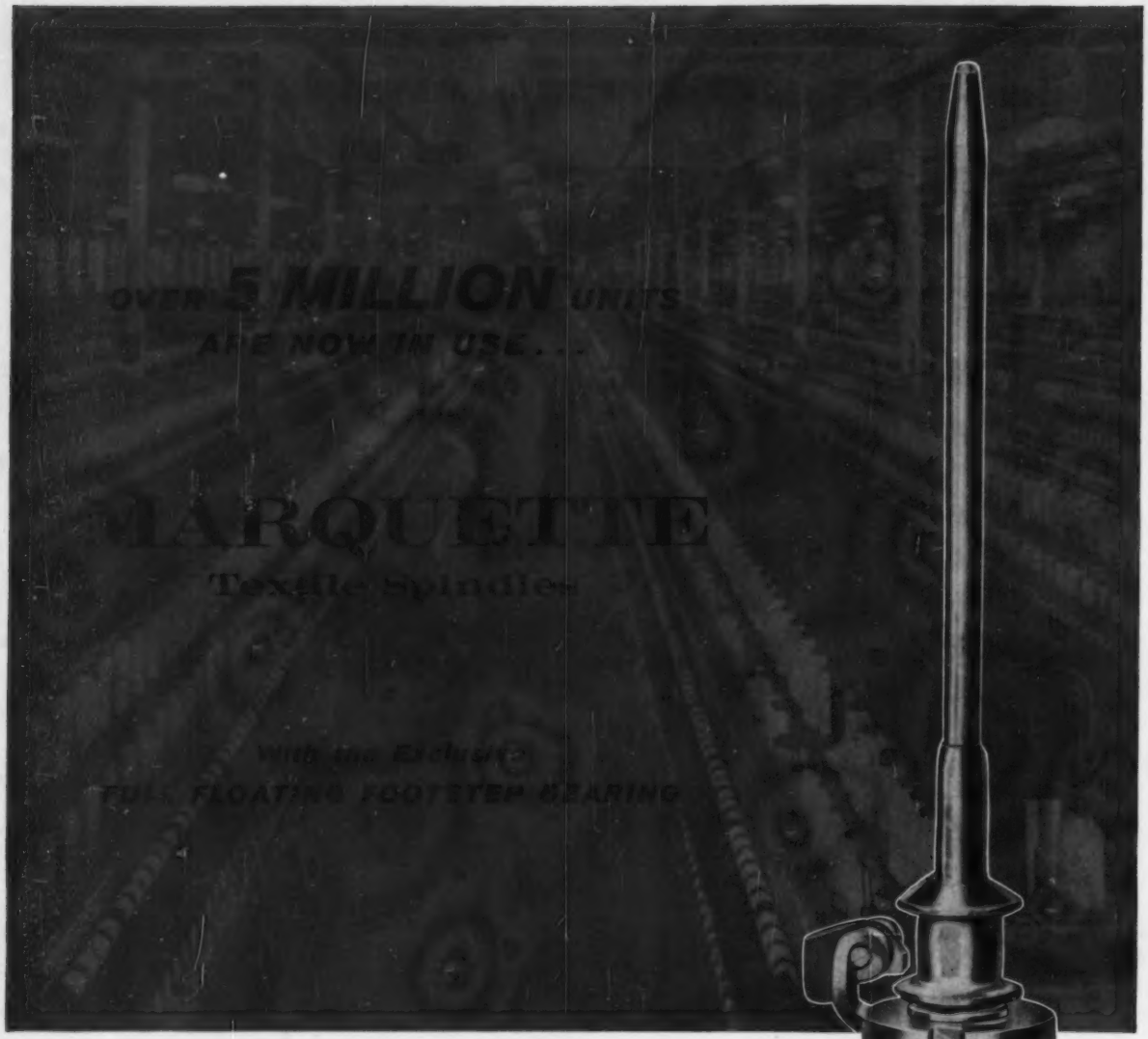
Dayco



- **Higher speeds with heavier packages**
- **Less vibration**
- **Lower power consumption**
- **Reduced maintenance costs**

Based on quality and performance — Marquette textile spindles are the continuing choice of profit-minded textile manufacturers.

Marquette spindles use from 11% to 30% less power than plain bearing spindles . . . reduce vibration so that loads can center themselves . . . and give years of continuous, high speed and maintenance-free service.

If you are planning for today's increased production . . . or for years-ahead expansion — pick the spindles designed to give you greater profit — time-tested Marquette textile spindles.

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MODERN TEXTILE MANAGEMENT

Article 10—Financial and Administrative Control Charts

by Norbert Lloyd Enrick[1]
Institute of Textile Technology
Charlottesville, Virginia

Exclusive

TODAY'S textile man knows and accepts statistical control charts in his quality program. Relatively recent additions, adopted on the basis of success in other industries, are financial and administrative control charts for production and sales management.

Such charts facilitate management control and management planning in four operational phases:

1. Past data and experience can be reviewed quickly in terms of past average performance and allowable fluctuations about this average.

2. Current data, representing current experience, may then be plotted and readily compared against past averages and variability about the average.

3. From this comparison, management will note quickly whether or not current performance is within the expected normal operating ranges. Moreover, any significant trends or developments will show up on the control chart.

4. Based on the information thus brought to management's attention, quick action can be directed towards those areas—be they labor cost, excessive waste, undesirable trends in controllable overhead, dangerous loss-rate of old customers, or other critical items—requiring management's concern, corrective steps, and follow-up. At the same time, those items which do not show undue changes—that is, where actual performance is within the normally allowable range, as expressed by the control limits—do not call for any management attention.

While sound management has always involved procedures of the nature just outlined, the financial and administrative control charts simplify and enhance the effectiveness of management decision making. By bringing all pertinent data together in comprehensive and readily reviewable form, the control chart becomes also a time-saver. Some initial work is required in deciding what types of financial and administrative control charts are to be maintained, and arranging for the flow of data to permit routine plotting of the information. Once this has been accomplished, however, only two or three hours' clerical work per month are needed to keep the charts up to date.

Management by Exception. The financial and administrative control chart fits in well with the "exception principle" of management. This principle is built on the philosophy that there is an inherent amount of variability in any process, performance, or cost series. This variability will be about the same tomorrow as it was yesterday, unless some definite or specific action or event has occurred to produce a change.

Management should not be worried about or bothered by fluctuations in quality, costs, or performance that stay within the range of variation that is normally to be expected. Only when a trend or sudden change occurs, indicative of a *significant* deviation above and beyond normally allowable fluctuations, is management attention and action required. With this philosophy, assurance is had that management time and energies are not needlessly spent, but are instead concentrated on those areas where real problems exist that require correction.

The criterion for distinguishing between normal variations and a significant trend or deviation is provided by the control limit of a control chart. Usually, there is an upper limit and a lower limit drawn a certain distance from the center line. A deviation beyond the limit, or a trend towards one of the limits, is indicative of developments requiring action.

Simple statistical procedures are available, using only elementary arithmetic, which may be used to develop control limits, based on the inherent variability exhibited by a series of data—be it costs, waste, efficiency, or other types of figures. For financial and administrative control, limits based on so-called 95 per cent confidence levels are generally desirable (1, 2)[2]. So long as the actual plotted data fall within the control limits constructed on this basis, there is no need generally for management to be concerned.

A plotted point falling outside the limits gives indication at the 95 per cent level of confidence (or 5 per cent risk of error) that a real change has occurred, requiring management's attention. Also, if no actual points have fallen outside the limits, but four or five points are consistently either above or below the center line, the trend provides a strong indication—again at the 95 per cent confidence level—that something has changed in the process.

Managers generally act on the basis of the exception principle; and the control chart gives them a sharper dividing line between the considerations of "no action needed" and "attention required," thus aiding management in making these types of decisions in production, quality, cost, and sales problems.

Financial Data Control Chart. Typical control charts of this na-

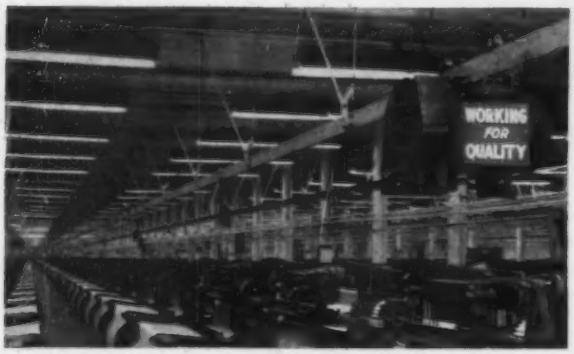
[1]Mr. Enrick is now associate professor, University of Virginia Graduate School of Business Administration, Charlottesville.

[2]Numbers in parentheses are references at the end of the article.

Now...keep your work areas clean automatically, with specially designed Amco Cleaners!

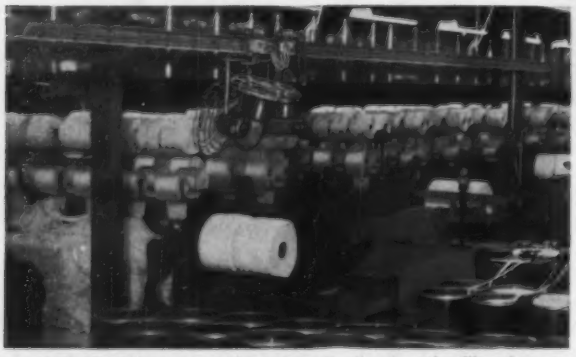
Amco has developed a wide selection of automatic cleaning equipment . . . designed to cut down manual cleaning, improve quality, and step up mill production.

For money-saving facts about Amco Cleaners, call American Moistening Company — an organization with more than 70 years' experience serving the textile field.

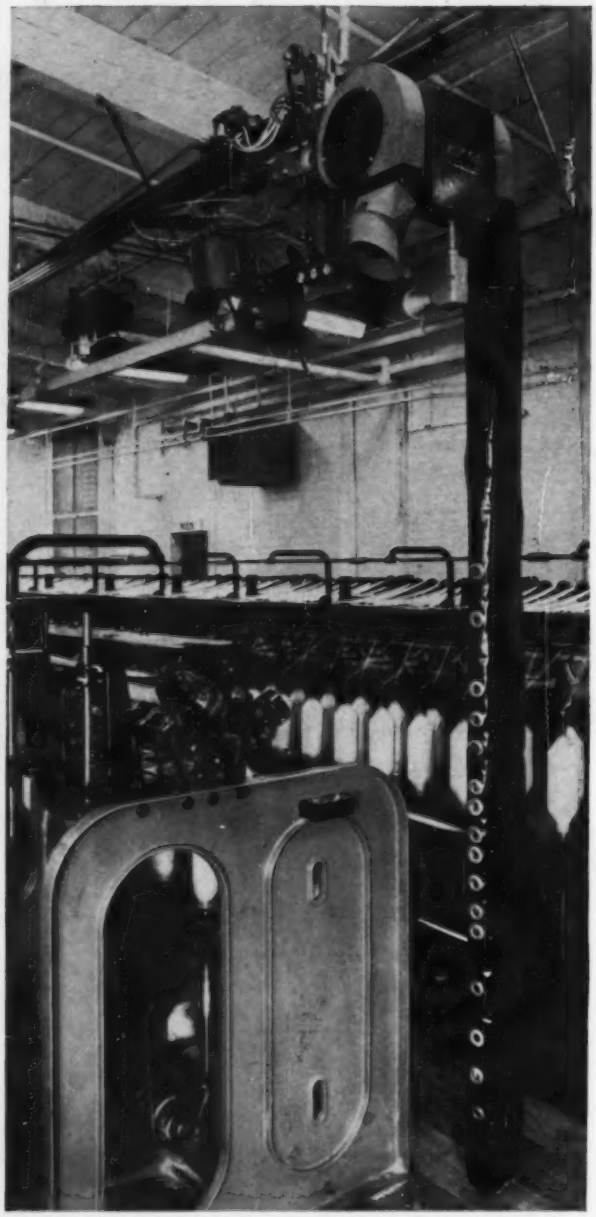


Helicone Loom Cleaners improve quality of fabrics by preventing waste accumulation on stop motions, drop wires, harnesses and reed caps.

Amco Loom Cleaners over Draper shuttleless looms. Sheeting is being woven at high relative humidity.



Amco Ceiling Cleaner provides automatic cleaning of ceiling, beams, walls and other surfaces. Excellent for card room areas.



Amco's electronically controlled Roving Frame and Ceiling Cleaner. Air delivery boot takes care of specific lint-collecting trouble spots.

AMCO

SINCE 1888

Air Conditioning Equipment — Textile Specialties

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Branches: Atlanta, Ga., Providence, R. I., Toronto, Ont.

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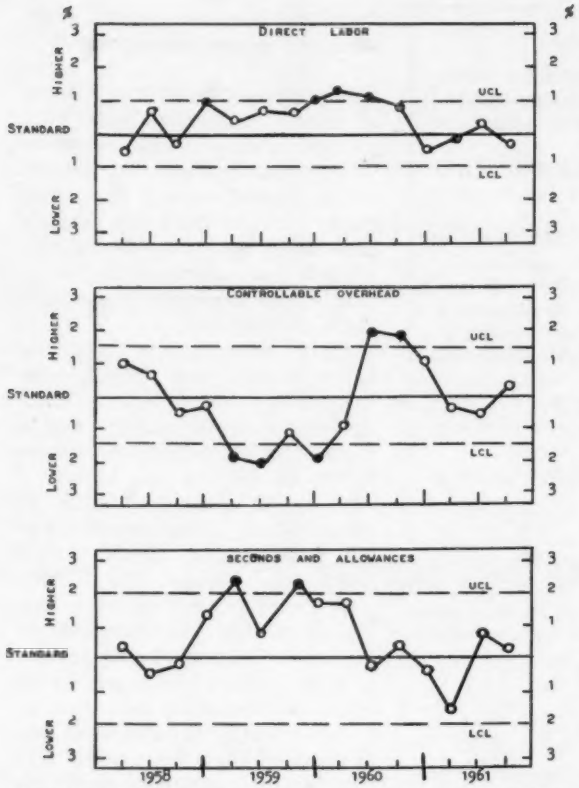


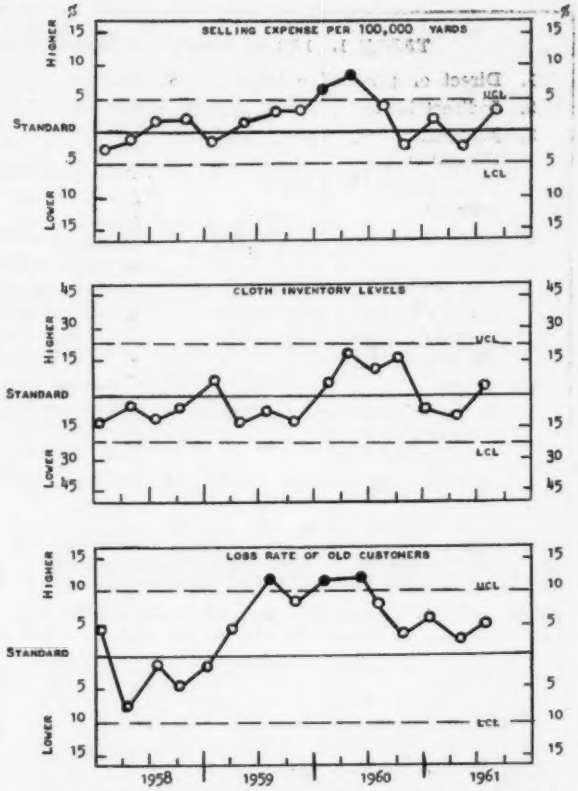


FIGURE 1 (left): Financial management control charts. FIGURE 2 (right): Sales administration control charts. Legend for both Figures: O, quarterly cost; UCL, upper control limit; ●, out of control; LCL, lower control limit.

ture, taken from actual but adapted data, are shown in *Figure 1*. The particular illustrations selected are charts for direct labor cost, for controllable overhead—thus excluding such fixed items as property taxes and depreciation—and for seconds and allowances. For each year, up to the third quarter of 1961, quarterly figures are shown; but in those cases where it is preferred, monthly data could have been used.

While actual costs of direct labor, overhead, and seconds could have been used, it was felt best to show instead the *deviations* of actual cost from standard cost. In this manner, a more constant basis of comparison is provided, especially in those cases where there are frequent fabric style changes. So long as the standard is revised to reflect these changes properly, it provides a sound basis for evaluation of *deviations* from standard.

Deviations are shown in per cent. Thus, direct labor cost in the first quarter of 1958 is shown to have been half a per cent below standard cost, overhead was 1 per cent above standard, and seconds and allowances were a third of a per cent higher than standard.

The particular example comes from a mill for which management control charts had been proposed, and for which past data were taken and analyzed by the control chart method. It was felt that, if the control chart had been available to management, the additional information provided in comprehensive and conveniently accessible manner would have been useful to management in its financial, administrative, and policy planning and decision making.

Reviewing the charts, note that from 1958 to 1960 direct labor cost tended to go upwards, exceeding the upper control limit in the last quarter of 1959. During the same period, controllable overhead declined, while seconds and allowances increased. Had these charts been on hand, then management might have taken action towards the end of 1958 to check into the causes of the high labor and seconds costs.

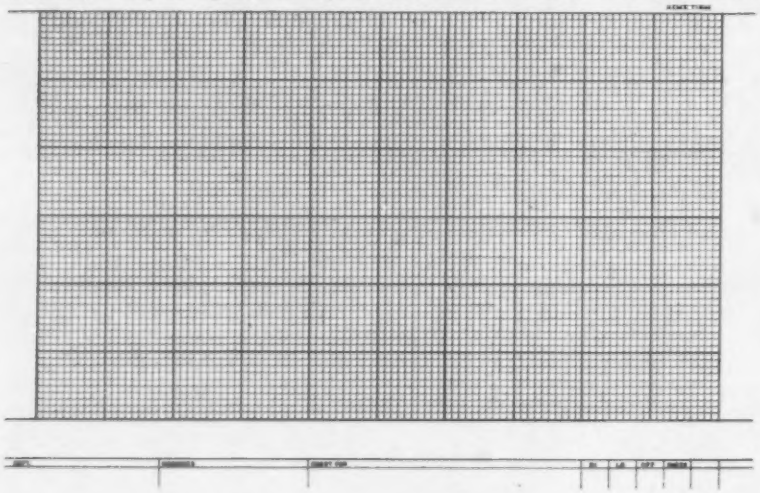
It turned out that the mill superintendent had stressed savings on replacement parts and economies in "unproductive" maintenance labor. Furthermore, an inadequate time study and quality control staff were maintained. As a result, while controllable overhead declined, the much more expensive areas from an over-all viewpoint—direct labor and quality losses—began to "inch upward." Eventually, these effects were noted and corrective action was taken—but, it was felt, much later than would have been the case with control chart surveillance of financial data, such as shown here.

Administrative Data Control Chart. Illustrations of this type of chart, in *Figure 2*, are taken from sales administration. Here again, the chart was prepared for past

TABLE 1. List of Managerial Control Charts

1. Direct or productive labor
2. Indirect labor
3. Administrative, sales, and clerical salaries
4. Cloth weights and yarn weights
5. Cost of supplies and repair parts
6. Cost of raw materials (raw stock, starch and other sizing materials, dyeing and finishing chemicals, etc.)
7. Waste
   a. Reworkable and nonreworkable waste
   b. Invisible waste
   c. Waste reported vs waste sold
8. Machine efficiencies (idle spindles, %; weaving efficiency; finishing plant utilization ratio)
9. Inventories (supplies, grey goods, finished goods, raw stock)
10. Quality
    a. Returns and allowances
    b. Seconds, short ends, rags
    c. Burling and mending costs
    d. Stripping and redyeing
    e. Yarn and fabric strengths
11. Customer gains (and losses of old customers)
12. Diversity of styles produced and customers served
13. Staff and salesmen's turnover rates

FIGURE 3. Control chart visible record card. Housed within a tray, only the lower section is visible; it may be signaled for high or low trends or actual off-limits performance.



data, and showed a gradual upward trend of selling expenses, accompanied by an increasing loss-rate of old cutomers. This loss rate is explainable, at least in part, as caused by the deterioration in quality shown in *Figure 1*.

With increasing complaints and customer losses, selling expenses went up. Undue time was spent by salesmen visiting customers who had complaints, while at the same time the loss of some of these customers required the hiring of extra salesmen and raised costs. Towards the end of 1960, as quality improved, the sales problems began to improve.

The sharp increase in overhead costs in 1960 is the result of a "crash program," spurred by the sales department, to reduce labor and thus fabric costs, and improve quality. If adequate machinery maintenance and time study and quality control staffing had been prevailing during 1958 and 1959, this crash program and the preceding losses from undue labor costs and poor quality could have been avoided.

Thus, financial and administrative control charts, by permitting constant control over the trend of costs and the effects of administrative developments, will help reduce problems in quality, cost, sales, and general management.

How Many Charts? The number of charts maintained will vary with the type of textile organization and the management interest in this type of control. The list in *Table 1*, taken from the author's experience, covers the items considered most worthwhile for financial and administrative control chart applications.

Many organizations may use fewer charts, and others may have many more charts. Convenient systems, using visible record card procedures, have been developed and are now used in a considerable number of mills. In such systems, using records housing provided by Acme Visible Records or Kardex, the normal record card is replaced by a control-chart graph, as illustrated in *Figure 3*. Only the lower portion of each card is visible, on which actual out-of-control conditions or trends towards out-of-control can be signaled. Only those charts that have been signaled need be examined.

The complaint is sometimes heard that modern machine accounting methods provide mill and sales management with more figures than can be absorbed in a busy day. The control chart, maintained by a clerk, will do much to relieve management of needless figure-studying—and at the same time provide valuable additional insight into the behavior and trends of the important financial and administrative facts that need watching.

When starting a control chart program, it would seem best to concentrate on a few major items known to be of the highest concern to management. Then, as the control chart approach gains favor, additional charts may be introduced, until a well rounded set of information-conveying charts has been developed.

References

1. Enrick, N. L., "Modern Mill Controls." New York: Rayon Publishing Corp., 1956.
2. Enrick, N. L., "Quality Control," 4th ed. New York: Industrial Press, 1960.

This article concludes the series, which has appeared monthly since the March 1961 issue.

Accurate measurement of tension to which a yarn is subjected at the twister, winder, warper, slasher, loom, knitting machine, etc., requires that the instrument be calibrated on a yarn running under similar conditions. Some methods mill technicians can use to calibrate tension meters for more accurate results are described here.

Improve tension tests!

by Erwin Saxl
President
Tensitron, Inc.

Exclusive

THE quasi-stationary data obtained from tests made under conditions of high inertia do not represent the type of stress to which a yarn is exposed when it suddenly gets "stuck" under a disk tension or is jerked off the filling bobbin when the shuttle flies across the loom.

If such dynamic stresses and strains on the yarn are not to go beyond its limits of safe tensions and thus cause ends-down and shiners—to mention but two of the most common defects—we must be able to measure them reliably today with the hope that we may control them automatically tomorrow.

The increased use of tension meters for this purpose makes necessary in turn a method for their calibration that approximates a performance test.

To calibrate tension meters reasonably equivalent to the action of warping, throwing and doubling, slashing and other yarn operations, tension must therefore be applied to a test yarn *in motion*.

Static Testing. It has been customary to check tension meters by the static load test in which weights are suspended from yarns. For testing, the tension meter is inserted into the hanging yarns thus loaded. This is shown in *Figure 1*. The weight hanging from the yarn is then supposed to produce the same deflection of the pointer as read on the dial.

However, the tension applied to a yarn under the above quasi-stationary laboratory conditions does *not* necessarily act upon a tension indicating instrument in the same manner as a yarn tensioned under the running conditions of the modern yarn preparatory mill.

The reason for this is that the effects registered by any tension meter are not a function of tension only. This is accentuated when dealing with materials which have significant stiffness, structure and thickness (such as tire cordage) as compared to highly flexible, elastic multifilament yarns of negligible diameter.

Monofilament yarns, cords, and the heavier textile fibers require work to be done in *flexure* also, not only in tension. Hence, yarn thickness, textile auxiliary oils and humidity, by reducing interfilament friction, also influence the "hanging weight" test.

A single weight hung from just one of the rollers of a tension meter is also misleading. This

FIG. 1. Hanging weight test

establishes just one single point of deflection. The tension meter may show substantial differences on other points of its dial calibration. It is a difference between a meter being guaranteed accurate for, say 1% *of total scale*, compared to the same precision *for each reading*.

Apparent tension is furthermore introduced by the resistance of the pulley bearings against rotation. The rotary resistance even of sensitive ball-bearings, is not negligible particularly when very small tensions must be resolved (such as in checking low-denier nylon multifilament yarn).

Also, their restraint is at times greater in one direction of rotation than in the other. Also, the load acting upon the sensing pulley, and the wheel diameter (or more precisely its groove) influence the speed on the bearings and thus their frictional restraint.

Thus, the *speed* as well as the load imposed by the filamentous materials, the nature of the yarn and its structure, and coning oils and sizes as well as other parameters influence the case history of the filament in contact with the pulley grooves.

These and other factors have to be standardized and in addition applied to the yarn in motion if we are to get tension readings that are significant from the yarn preparatory standpoint and not just machine constants.

Since the *static* "hanging weight test" is inadequate for the above mentioned reasons, the answer is to calibrate tension on the *moving* yarn.

An attempt has been made for some time to control the tension of moving yarns (see bibliography, references 1 to 8 at end of article). From a practical viewpoint, however, there has not been a satisfactory solution that in one single set-up produces the necessary freedom from the stick-and-slip tension of all frictional restraints . . . . which have a high break-away tension and a low running tension . . . . hunting, filament breakage and, in the better devices, furthermore require complicated electronic equipment.

It appears significant, therefore, that a recent breakthrough permits the smooth adjustment of

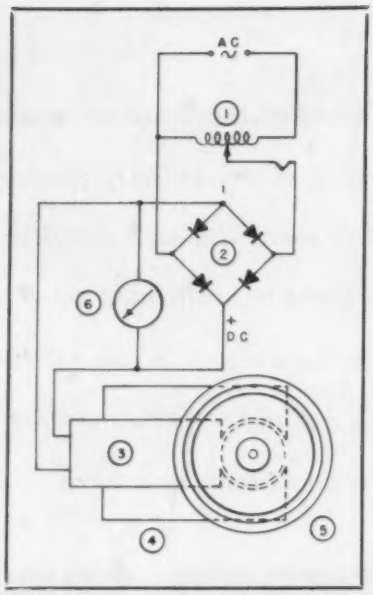


FIG. 2. Schematic of eddy current device

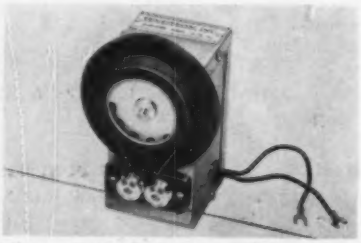


FIG. 3. Retarded traction pulley with nonslip cover

yarn tension even at high speeds. It has the smooth yarn-to-tension contact that does not squeeze and break the filaments and is infinitely adjustable even at high speeds.

Electrical Tension Control. An eddy current device was developed[1], the principle of which is shown schematically in *Figure 2*.

By using the principle of a lightweight, low - inertia wheel covered with an expendable, nonslip cover, a new and essential element of construction is presented that can be incorporated also in many other different designs. Eddy current tensioning offers the further advantage of infinite tension adjustment.

Alternating current is fed into the input side of a variable autotransformer (1). This lower voltage is then fed to the a-c side of a full-wave rectifier bridge (2). This electric energy is fed into the stator coil of a small electric, rotary device (3).

The variable d-c produces a retardation in the rotor. By varying the voltage and current in the stator coil only, a smoothly adjustable resistance against rotation is imparted to the rotor.

Since retardation is proportionate to the flux within the gap of what may be considered an electromagnet, different torque loads of the rotor can be adjusted smoothly and steplessly on the autotransformer while the yarn runs.

They can be preset or programmed electrically, if desired. The voltage that is operative in the coil may be measured on an ammeter type instrument (6). Indications on the ammeter can be calibrated in terms of tension developed on the yarn.

Connection to the yarn proper is made over the lightweight, nonslip traction wheel referred to above. It is shown in *Figure 3*. On the periphery of same, an expendable, nonslip material, such as a knitted sleeving or a sleeve made from an elastomer, is used.

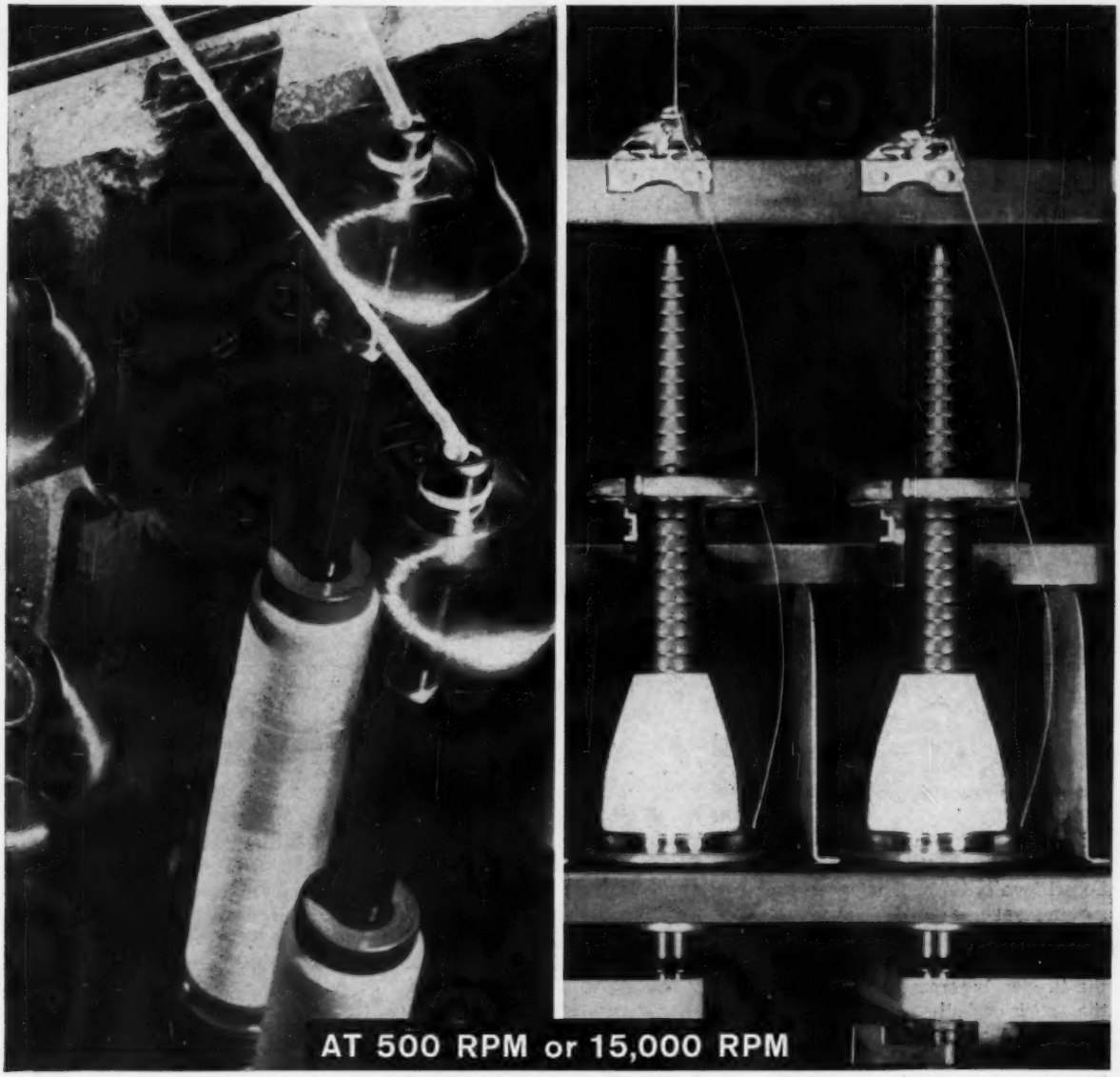
The combination of a small rotor of little inertia, exposed in this manner to a highly concentrated and infinitely adjustable magnetic braking field, without mechanical contact between yarn and braked surface, constitutes at long last a realistic answer to the use of eddy current brakes on filamentous materials.

In the specific design shown, the tension range of the yarn can be adjusted between about 2 up to 100 grams. This is adequate for the finer synthetic yarns where tension is most critical.

Since some tension meters, however, have to include higher total tension ranges, it is advisable to add auxiliary stages in such latter instances. For the higher tensions required, rough tension adjustment may be made by preliminary tension devices.

Auxiliary Disk Tensions. Commercial disk-type tensions may be used for this pretensioning as

[1]Patents pending



Texspray reduces fibre breakage

High-speed processing throughout your mill requires maximum fibre pliability – Texaco Texspray provides it. It softens waxy scale and seals in natural moisture to give you a higher percentage of long, easily processed staple. You get reduced static and minimized "ends down." Your production goes up due to improved operation of every process.

Texspray reduces fly by as much as 75%. By keeping fibre pliable, thousands of fly-producing fibre breaks are prevented. Thus, much of the fibre formerly lost as fly remains usable. At the same time, employees benefit from cleaner, healthier working conditions and less frequent "blow downs" are required.

Texspray helps increase machine life. The path of all Texspray-conditioned stock is brightened. Parts are more resistant to rust. Machines last longer – with fewer break-downs.

Texspray is one of many Texaco products designed to improve mill efficiency and boost your profits. Why not investigate all the savings available to you through good lubrication? Ask your local Texaco Lubrication Engineer for details about Texaco's "Stop Loss" program, or write: Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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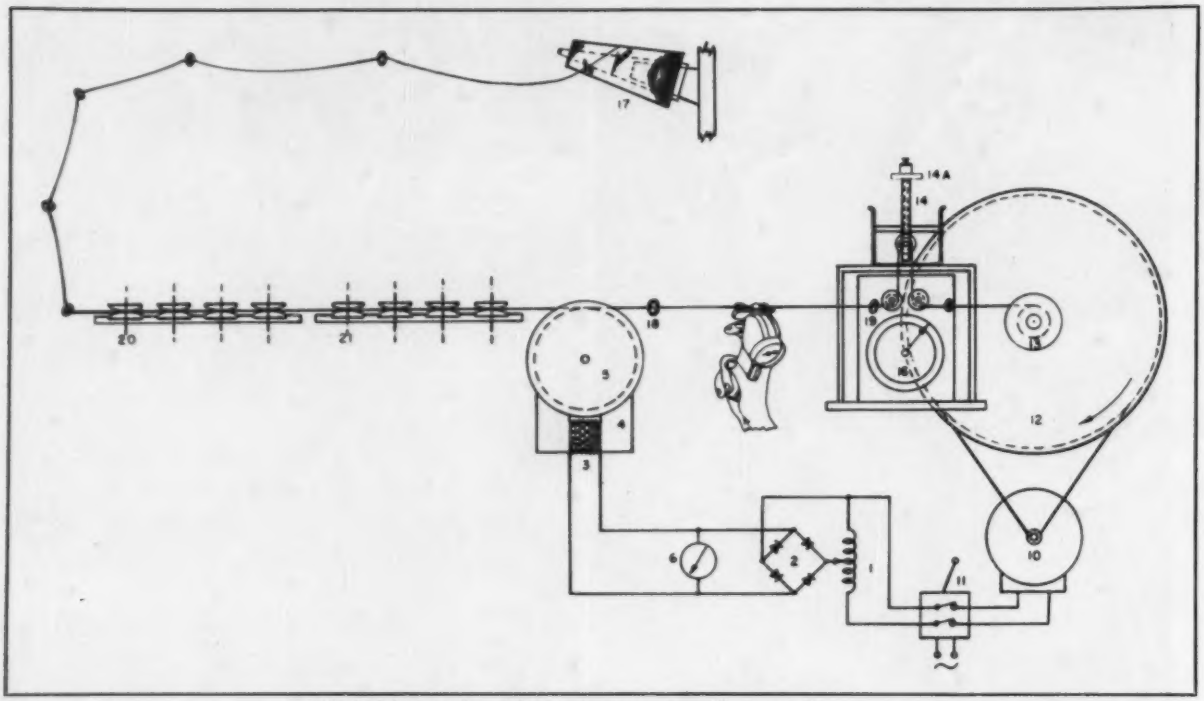

FIG. 4. Schematic for calibrating tension meters with yarn running

shown in *Figure* 4 per details 20 and 21.

In using disk tensions, it is important to know their limitations. To achieve uniform tension on the moving yarn, each disk must rotate.

Once the disk stops revolving, the tension becomes uneven. Then the stick-and-slip effect enters, whereby the *break-away tension is higher than the running tension.* Hence, comparatively rough finishing, such as a plating of the disks with satin chromium and sandblasting them, gives a smoother average yarn tension than smooth, bright metal finishes.

This is because the coefficient of friction between disk and yarn is increased. Also, other means of vibrating the disks may be chosen —be they electromagnetic or mechanical.

To achieve smooth tensioning action from several commercial disk tensions, it is necessary to build up the yarn tensions *gradually* from the entering position of the yarn towards its exit. Thus the yarn may enter disk #1 with little or no load on the latter. Subsequent disks are loaded gradually, for instance by increasing the number of washers or the load of shot upon the upper disk.

Too few tension positions and their overloading cause the yarn to slip from under the disks. This gives it a start-and-stop motion changing from a high static break-away tension to a lower, dynamic running tension instead of the smooth and uniform pinching action which gradually builds up tension on the yarn from low as it enters, to increasingly higher tensions as it passes under subsequent disks.

The limit of load per position is given by:

1. The yarn must pass *underneath* the disk tension. It must not slip out from under the disk.
2. The load on the disk must be low enough for each disk to rotate. Too much load stops it.

The Rewinding Device. A small electric motor (10) as shown in *Figure 4* is used to move the yarn. A switch (11) plugged into a standard light outlet, operates the electrical tension control.

If it is desirable to reduce the speed on the rewinding position, a large pulley (12) may be connected over a belt or its equivalent to the driving pulley of the a-c motor. Instead of the pulley arrangement, any other step-down speed reducer can be used, such as a worm-gear drive or multiple-gear reducer.

A tapered winding bobbin core (13) is attached concentrically to the axis of the pulley (12) and thus rotates slowly. The yarn is rewound steadily on the pulley.

The tapered form facilitates doffing of the yarn after a quantity of it is deposited on the pulley. The build-up yarn can then be readily slid off towards the front for removal.

Objective Calibration. As a means of reading tension objectively, a carefully calibrated spring scale is used over which the yarn is guided. A low friction ball-bearing pulley from a tension meter is attached to the moving platform of the scale.

The two portions of yarn which pull this roller downward *must be parallel* to each other. The yarn is led around the three rollers.

Thus the center roller is pulled

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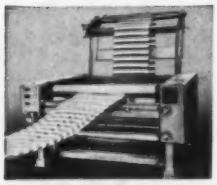

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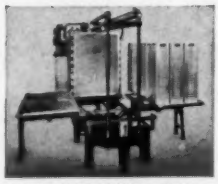

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downwards when tension is applied to the yarn. The rollers should pull the yarn in parallel. This arrangement imparts to the scale, therefore, an apparent *double* tension.

Accordingly, 200 grams direct load, as indicated on the scale, are the equivalent to 100 grams actual running tension on the yarn between points 18 and 19. Therefore, the readings on the scale should be divided by 2 to indicate the running tensions as measured on the tension meter. This doubles the accuracy of the test.

A frame is put on the balance scale and a piston is attached to it which plunges into oil. An air damper may be used instead. This detail is important as damping of the scale readings is advisable. The oil plunger in its frame is shown under (14), whereas the rollers are just below this and the indicating dial is shown schematically at (16).

The Test Yarn. The yarn coming with a minimum of restraint by overhead pull from an inclined cone (17), goes thus through a number of smoothly covered eyelets (such as A!SiMag guides) and is threaded through disk tensions (20) and (21). Thereafter, it enters the electric tensioning wheel (5) with its non-slip cover.

The yarn should have a tensile strength at least three times the maximum testing tensions encountered. The equivalent or higher of a 1650 denier, 720 filament knitting cone, 1.5 turns per inch works well. Two-pound cones or larger packages of super high strength, smooth continuous yarn are indicated. It should be of the endless filament type, smoothly running, have a minimum of twist, and should be covered with a good grade of coning oil. The use of spun-cotton, staple, or woolen yarn is counter-indicated as are sewing threads.

Test Procedure. Using a set of analytical weights, same are placed in rotation on the top of the spring scale. Regardless of the quality of the scale, there is sometimes found a deviation from linearity in same.

If truly precise readings are to be taken, then the deflection should be ascertained against check weights prior to each individual test point. In this manner, the deflection of the spring scale can be given absolute calibration against dead weight for each tension.

Compensation then can be easily made for the weight of the pulley, piston, etc., that are attached to the weighing platform (for instance by rotating the dial of the scale). The scale should be checked against dead weights at least once a day before beginning of the tests.

Knowing then, that at a given setting of the autotransformer (1), plus a certain loading of the tension disks (20 and 21), there is a steady tension developed in the yarn, we then can check the tension by its indication as shown on the scale. Fine adjustments of the tension of the running yarn are made by regulating the autotransformer.

Tension on the Moving Yarn. With the motor (10) running and the yarn traveling from cone (17) to tapered pulley (13) through the tensioning wheel (5) and associated tensions, the tension meter to be tested is inserted between (18) and (19) *Figure 4* and the weight read on the scale before and after the insertion of the tension meter.

The added tension after the insertion of the tension meter, divided by two, is the rotary restraint of the rollers of the tension meter.

The restraint of the rollers can be measured quantitatively as follows:

On a yarn that is pulled continuously against the uniformly adjusted tension, *two* tension meters may be inserted, one in back of the other. Then the tension meter that is touched by the moving yarn first will give, as a rule, one set of readings that are lower.

The second tension meter that measures the tension of the yarn plus the additional tensions introduced by the rollers of the first tension meter gives readings that are apparently higher. Exchanging the two tension meters reverses the readings thus proving the same effect.

The difference between the two readings, therefore, is the rotary resistance added by the rollers of meter No. 1. Thus, restraint put upon the yarn having moved through meter No. 1 is measured by meter No. 2. The difference in tensions due to the introduction of the first meter is also read on the spring scale.

Whereas the influence of the exit roller (that is to say, the roller over which the yarn passes when it leaves the tension meter) is of comparatively little influence, the retardation within the input roller as well as in the roller fastened to the sensing feeler does influence the calibration.

Each instrument requires individual compensation for these differences in order to achieve precise calibration. Hence methods of calibration that neglect to compensate for roller resistance and do not include the influence of the moving yarn are inadequate.

Precise calibrating equipment like this makes possible thus for the first time the dynamic calibration of tension meters with reproducible accuracy.

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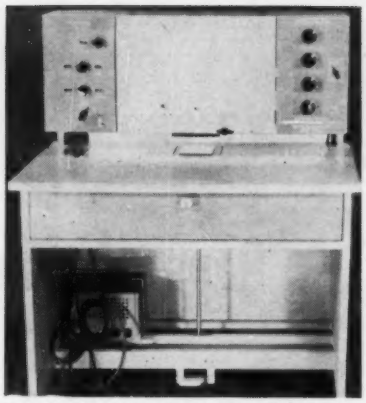
Instrument automates fabric matching operation

■ THE U. S. Army Quartermaster Corps is testing an automatic meter for measuring color differences of textile fabrics. If successful, the meter will rapidly and accurately furnish exact figures on colors, according to Frank J. Rizzo of the Quartermaster Research & Engineering Command, Natick, Mass., who recently has been honored (TI for October 1961, page 192) for his contribution to the development of the fully automated instrument.

It is emphasized that the machine "sees" colors more precisely than do human beings. The figures furnished by the machine can be recorded and duplicated for subsequent study.

Hunter Associates Laboratory, Inc., of McLean, Va., recently developed the meter under subcontract to Macbeth Corp., of Newburgh, N. Y., which is under contract with the Quartermaster Research & Engineering Command, Natick, Mass. The meter is based on the 1958 model of the Color Difference Meter invented by Richard S. Hunter, formerly of the National Bureau of Standards; however, several changes have been incorporated in the Quartermaster Tristimulus Colorimeter. These include: (1) the light source was adjusted to be the same as that used by color-matchers; (2) the angle at which the light shines on the fabric sample was made smaller; (3) corrections were made in the three filters to make them similar to the three primary colors set in 1931 by the International Committee for the Standard Observer, and (4) the operation was automated.



The Quartermaster Tristimulus Colorimeter.

Doffer-Spinner *(from page 67)*

Now n_1 equals gs, and n_2 is n_1 divided by E_4

55.	n_1 given by (37) x (54)	738	1607
56.	n_2 given by (55) ÷ (43)	936	1789

The meaning of line 56 is not that 936 or 1789 spindles would actually be assigned. For one thing, they may not even make an even number of sides, and for another, the spinner, or doffer, is not likely to have a full assignment of the same kind of yarn. The stated number is merely used in obtaining the fractional load per spindle for the purpose of having the means of building up a load from diverse kinds of yarn. In this example, it is assumed that the spinner is allowed 20% free time, leaving a work time or load of 80%. Line 57 shows the fractional workload or unit workload, b, per spindle.

57.	$80 \div n_3 = b$	0.0854	0.0447

Next we may require to know or at least be interested in knowing the average time of a patrol in minutes, including rest. It is given:

$$y = \frac{120}{q\,(2g - 1)}$$

58.	120 divided by line 47 = y	11.5	22.6

Finally, to obtain the over-all standard efficiency and the standard production quota, we have E (over-all) equals E_s x E_o.

59.	E (over-all) = (40) x (43)	0.768	0.884
60.	Pounds per mrh, from line 12	0.1828	0.0317
61.	Standard quota, pounds per spindle hour at the going efficiency (59) x (60)	0.1401	0.0280
62.	Hanks per mrh, from line 11	1.462	0.950
63.	Standard quota, hanks per spindle hour (62) x (59)	1.121	0.840

Conclusion. In the above will be found all the information needed for making up a job load for a spinner or doffer with the two kinds of product which we selected as examples. All other types of yarn which might be included in an assignment would be treated similarly.

In making the assumption that mixing the yarns in one assignment will not affect the resulting efficiencies, nor the job fractional contributions, we follow the reasoning that it makes no difference to the standard operator at which machine his work is done. If he is twice as often at one machine as at another, necessitated by the fact of a greater cycle ratio, this does not affect the result.

If the operator exercises choice, motivated by conclusions he may have reached as to the relative values of different styles to him personally, he will be a non-standard operator and his results will deviate from standard. He will be paid accordingly. It is his pay which is affected, not the standard. We firmly maintain the fixity of the standard efficiency. It is the basis of our standard costing system.

Where wage payment is made by the hank without regard to the weight, the standard set by the methods of this article will be kind to the operator by a small amount—about 2½% in the case of 8s yarn, and about 1½% in the case of 30s. If it is considered important, the correction is readily made.

One final point—the choice of an initial value for the constant g. For the first trial there seems no other course than to rely on experience or "feeling." After that, the routine outlined above will take over and lead to the desired answers eventually, if not at the first attempt.

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2. See also Cyclic vs Random Servicing, TEXTILE INDUSTRIES, March 1959, pages 81 through 85. Same author.

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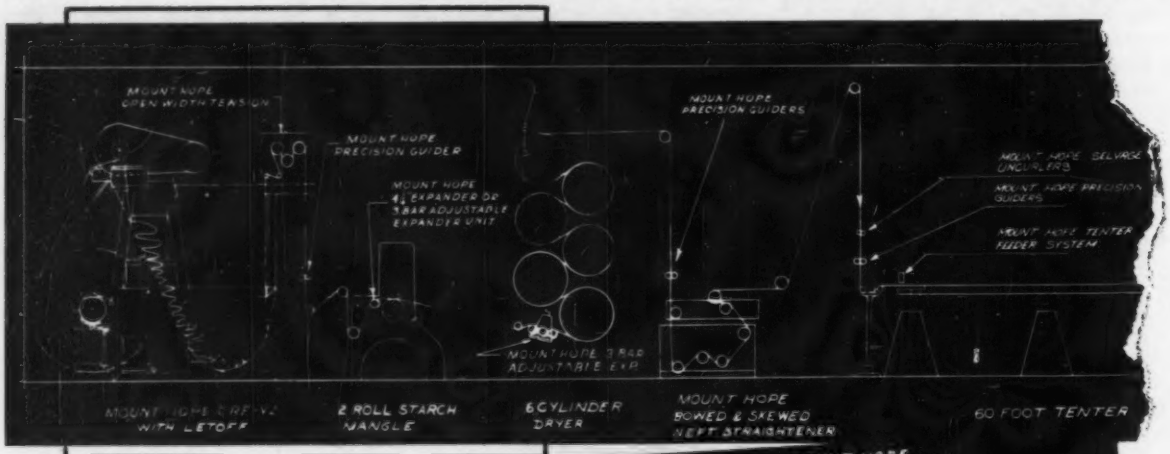
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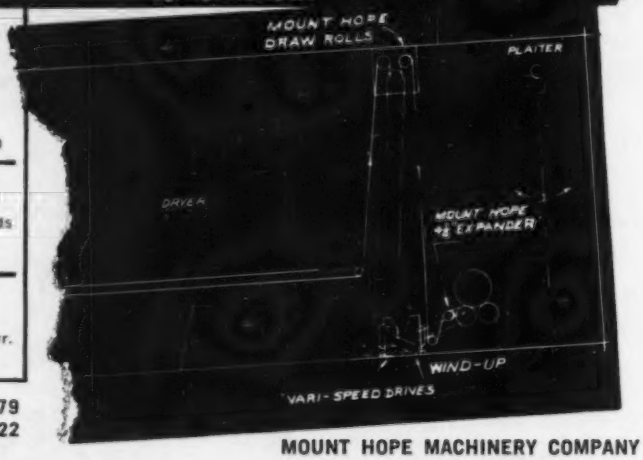
MOUNT HOPE WITH LETOFF
2 ROLL STARCH MANGLE
6 CYLINDER DRYER
MOUNT HOPE BOWED & SKEWED WEFT STRAIGHTENER
60 FOOT TENTER

PRODUCTION	Before	After
Speed	80 ypm	100 ypm
Yards in Supply Roll	1500	1500
Roll Change Time	5 minutes	NONE
Yards per day	35,200	48,000
YARDAGE GAIN PER EIGHT-HOUR SHIFT		12,800
YARDAGE GAIN PER YEAR		3,170,000

RE-RUNS	Before	After
	10%	3%
	3520 yards	1440 yards
RE-RUNS SAVINGS PER EIGHT-HOUR SHIFT		$5.29
RE-RUNS SAVINGS PER YEAR		$1,322

GENERAL OPERATING COSTS	Before	After
SAVINGS PER YEAR	$18,900 yr.	$12,600 yr.
	SAVINGS	$6,300



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Fiber reactives for nylon

The properties of the Procinyl reactive dyes

by S. Blackburn
Dyestuffs Division
Imperial Chemical Industries Ltd.
Manchester, England

Exclusive

NO ATTEMPT has been made until recently to produce a really novel range of dyes for nylon textiles, and when it is considered that the vast majority of the dyes used for dyeing this fiber were originally developed for acetate rayon or wool it is not surprising that they do not meet entirely the requirements peculiar to the coloration of nylon. The merits of the disperse dyes, for instance, although they include excellent dyeing and coverage properties, are offset by only moderate wet fastness.

Conversely, water-soluble dyes possess better wet fastness than the disperse dyes but are inferior in dyeing characteristics, and although modified dyeing techniques designed to improve the coverage of fiber irregularities and levelness of dyeing have been exploited to the full, they have achieved only limited success.

The advantages, therefore, of producing a novel range of dyes which would combine the dyeing properties of the disperse colors with the superior fastness of many water-soluble dyes were clear from the outset. The result of efforts to this end has been the development of the "Procinyl" reactive dyes.

The present range of Procinyls consists of five dyes—a yellow, an orange, a scarlet, a rubine, and a blue—all bright in hue, and which in suitable combinations are capable of yielding a wide variety of mode shades. They are disperse as opposed to water-soluble in character, and under well defined conditions the Procinyls react with the primary amino and amido groups of the polyamide fiber. Practically no reaction takes place in acid media. Reaction and fixation occur under alkaline conditions, as has been proved by methods which are now well known.

The extent to which the dyeing characteristics of disperse dyes have been reproduced in Procinyl dyes has been established by comparative rate of dyeing and migra-

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TABLE 1. Migration Tests of Procinyl and Disperse Dyes

	Leveling %
REACTIVE DISPERSE DYES	
Procinyl Yellow G	43
Procinyl Orange G	88
Procinyl Scarlet G	75
Procinyl Blue R	87
DISPERSE DYES	
Dispersol Fast Crimson B (11115)*	44
Duranol Brilliant Blue BN (61505)*	82
Duranol Blue Green B (62500)*	60
Duranol Violet 2R (61100)*	92

Test Conditions

Procinyl Dyes. Temperature, 95 C (205 F). Dye (unfixed) and undyed hanks treated for 1 hr in blank bath set with 1 part Dispersol VL and 2 parts acetic acid 30%. Liquor-to-goods ratio, 40:1.

Disperse Dyes. Temperature, 85 C (185 F). Dyed and undyed hanks treated for 1 hr in blank bath set with 1 part Dispersol VL. Liquor-to-goods ratio, 40:1.

Percentage leveling expressed as:

$$\frac{\text{Dye on leveled hank}}{\text{Dye on initially dyed hank}} \times 100$$

*Numbers in parentheses are Colour Index numbers.

tion tests, these being the factors that determine level-dyeing behavior. Such tests on reactive dyes are of course only of interest before fixation and are, therefore, carried out in acid media.

Figure 1 shows the rate-of-dyeing curves of a number of Procinyl and disperse dyes, while the results of migration tests as a measure of leveling are given in *Table 1.* The rate-of-dyeing properties are similar to those of the slow-to-moderate disperse dyes, and from these results and those of the migration tests it is reasonable to conclude that in dyeing properties the Procinyl dyes show a close resemblance to typical disperse dyes.

Other points of similarity between Procinyl and the disperse dyes are to be found in their excellent compatibility with each other in admixture and their coverage of irregular-dyeing nylon. In the latter characteristic the Procinyls on completion of the dyeing—that is, after fixation—are equal to all but the very best disperse dyes. Since it is generally recognized that disperse colors are superior to anionic dyes in each of these important properties, it follows that the Procinyls also offer advantages over anionic dyes in both respects.

As already mentioned, reaction or fixation of Procinyl dye on the fiber occurs under alkaline conditions, and the fixation/time relationship of four of the Procinyl dyes is illustrated in *Figure 2.*

From a knowledge of the behavior of these dyes under constant and varying pH conditions—the latter are shown in *Figure 3*—the most satisfactory dyeing method has been formulated, details of it being given below.

Method for Dyeing Nylon with Procinyls

Preparation of Dispersion. Sprinkle the required quantity of Procinyl dyestuff onto between ten and twenty times its weight of

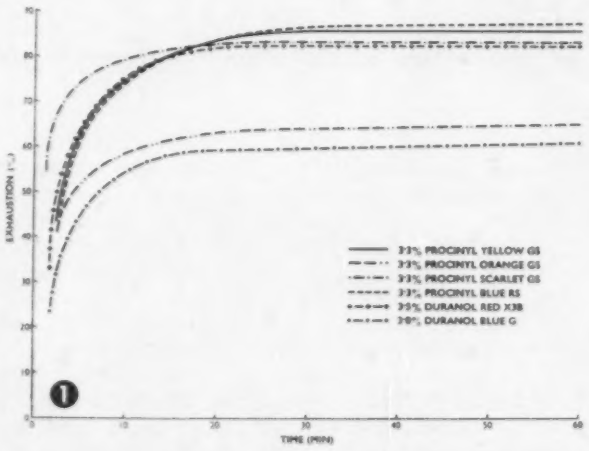

FIGURE 1. Rate-of-dyeing curves, Procinyl and disperse dyes. Dyed from buffer solution containing 2 g acetic acid, 0.25 g ammonium acetate, and 1 g Dispersol VL per liter. Temp 95 C (205 F); liquor ratio, 40:1.

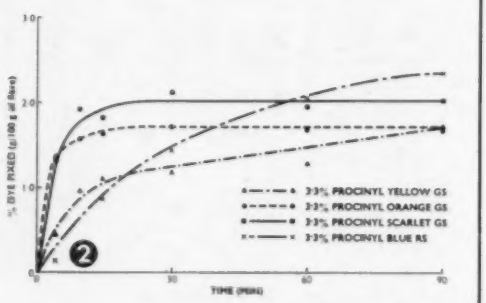

FIGURE 2. Rate of fixation of Procinyl dyestuffs. Fixed in bath of pH 10.5. Temp 95 C (205 F); liquor ratio 40:1.

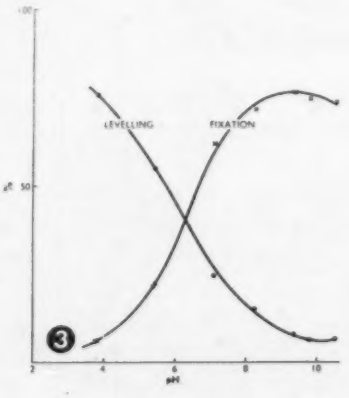

FIGURE 3. Procinyl Blue R: Variation of leveling and fixation with dyebath pH. 1.0% shade (pure dye), dyed for 1 hr at 95 C (205 F). Liquor ratio, 40:1.

warm, neutral water (pH not to exceed 7.5) with continuous agitation. The temperature of the water should not exceed 50 C (120 F).

Allow the mixture to stand for 10 minutes with occasional stirring. Sieve or strain the dispersion formed into the dyebath.

Preparation of Dyebath. Set the dyebath at 40 C (105 F) with:

Water	1000 parts
Acetic acid (30%)	2 parts
Dispersol VL (or, in high-temperature dyeing equipment, or for pale shades, Lissapol D)	1 part
Dyestuff	—%

Dyeing Procedure. Enter the goods and begin dyeing, raising the temperature slowly to 85-100 C (185-212 F) and continuing dyeing at this temperature for 30 minutes. If necessary, during dyeing adjust the pH so that it lies in the range 3.5-4.0 by adding dilute acetic acid.

Then add a solution of 2.5-3.0 parts soda ash previously dissolved in water, sufficient being added to bring the pH of the dyebath into the range 10.0-10.5. Continue dyeing at 85-100 C (185-212 F) for a further 60 minutes. Rinse the goods in water.

In the case of the heavier depths of shade, soap at 65 C (150 F) for 15-30 minutes in:

Water	1000 parts
Lissapol ND	2 parts
Soda ash	2 parts

Finally, rinse the goods in cold water and dry.

This method is applicable to nylon dyed in normal batchwise dyeing equipment—for example, circulating-liquor machines, jigs, winches, or paddle machines. Where pad-roll equipment is available, sodium bicarbonate is used to develop the necessary alkalinity for fixation under batching conditions. The padding liquor is prepared with the necessary Procinyl dyes and sodium bicarbonate, wetting agent, and thickener, the fabric being padded at low temperature, heated, batched, and run for 2-4 hours at 95 C (205 F) in the humidity-controlled batching unit, followed by a short "soaping" aftertreatment. This method is capable of yielding dyeings of good color value and fastness properties, typical of those obtained by the conventional batchwise dyeing technique.

Data on the more important fastness properties of the Procinyl dyes are given in *Table 2*. In wet fastness they are much superior to disperse dyes and also to many water-soluble dyes—even after back-tanning—as a result of the covalent link uniting dye and fiber.

Not all the dye reacts with the fiber, however, as shown in *Figure 2*. A side-reaction occurs, the deactivated dye remaining on the nylon. Nevertheless, the fact that they compare so favorably with the more conventional dyes indicates that this is not a serious disadvantage.

In addition, the Procinyl dyes possess exceptionally good heat fastness properties, which enables them to withstand severe dry heat setting and steam post-boarding treatments, and light fastness properties adequate for most end-uses of nylon textiles. Indeed they find outlets in almost all the major textile uses to which nylon is put, including knitting yarns, hose and half-hose, lingerie, overalls, and dress goods.

The manifold reasons for their acceptance are not solely related to their reactivity and the resulting high fastness—such properties can for that matter be obtained with Procion dyes applied to nylon. Level dyeing properties, compatibility in admixture, and good coverage of barré nylon, together with high fastness—these constitute their great attraction and represent a combination that is difficult to achieve using conventional nylon dyes.

NOTE: The Procinyl dyes are available in the U.S. from Arnold, Hoffman & Co., Inc.

Dispersol VL is sold domestically as Ahcowet VL; Lissapol D is an anionic general detergent, Ahcowet ANS; and Lissapol ND is technically equivalent to Synthrapol SP. These are also available from Arnold, Hoffman.

TABLE 2. Procinyl Dyes—Fastness Properties on Nylon 66 (Standard Depth of Shade)

	Light (Daylight)		Dry Heat Pleating and Setting 10 sec at 200 C (390 F)		Steam Pleating 15 min at 10 lb/sq in. (0.7 kg/cm²)			Mechanical Wash Test A 30 min at 60 C (140 F)			Test No. 3 30 min at 85 C (185 F)		
						Staining of			Staining of			Staining of	
	Wilmslow, England	Bombay, India	Effect on Dyeing	Staining of Nylon	Effect on Dyeing	Nylon	Wool	Effect on Dyeing	Nylon	Wool	Effect on Dyeing	Nylon	Cotton
Procinyl Yellow G	6	6	5	5	5	5	4-5	5	5	5	5	4-5	5
Procinyl Orange G	5	5	5	5	5	5	4-5	5	5	5	4	4-5	5
Procinyl Scarlet G	5-6	5	5	5	5	5	5	5	5	5	5	4-5	5
Procinyl Rubine B	4	3-4	5	5	5	5	5	5	5	5	5	4	4-5
Procinyl Blue R	5 redder	4-5 redder	5	5	5	5	5	5	5	5	5	4-5	5

Washing and heat tests assessed on 1-5 Geometric Grey Scales as specified by the Society of Dyers and Colourists (5 maximum).

Light tests assessed by comparison with British Standards Institution standards (8 maximum).

CMC

warp size is gentle to synthetic filament filling

Spun warps sized with Hercules® CMC are smooth, soft and flexible. CMC Warp Size thus helps eliminate broken filaments in the filling, resulting from a harsh sized warp. At the same time the softness of CMC helps assure the good hand so important to fabric salability. For additional information on the properties of CMC Warp Size, and its ability to contribute to manufacturing efficiency, write:

Cellulose and Protein Products Department

VC61-6

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Hercules Tower, 910 Market Street, Wilmington 99, Del.

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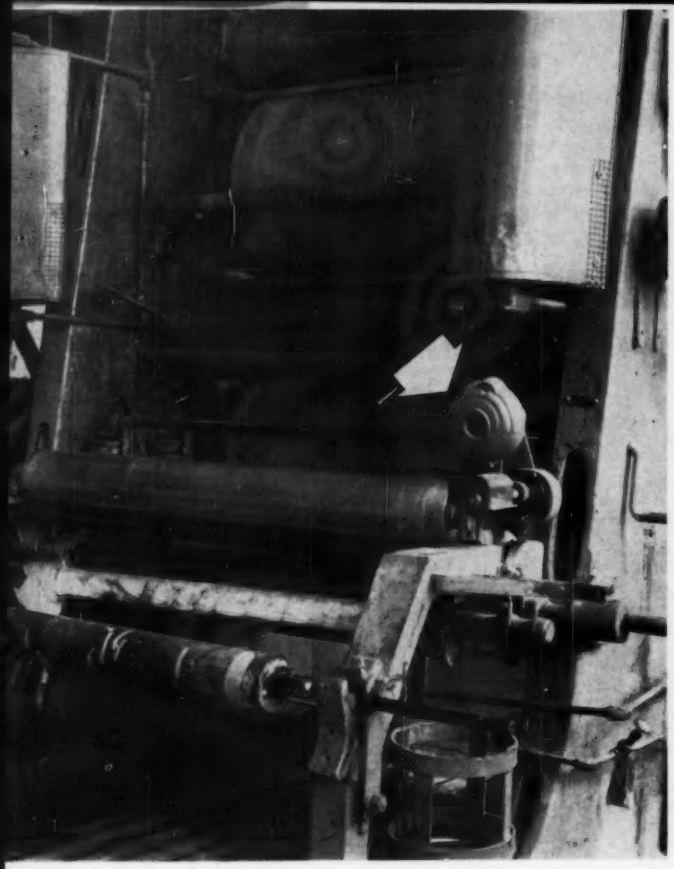
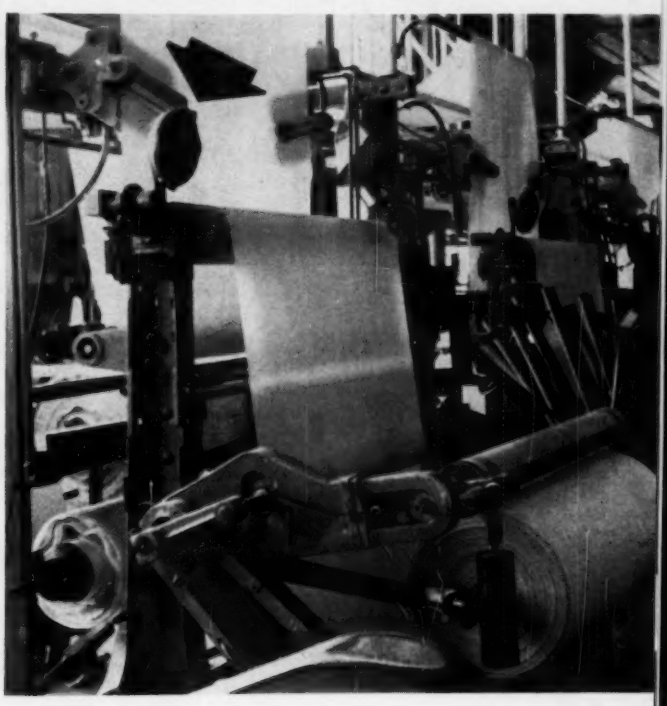


LEFT: One of the recorders mounted on a batcher.
BELOW: Counter and recorder attached to inspection equipment.



Finisher's silent watchmen

How management profits from data provided by machine operations recorders

Staff prepared

Exclusive

ONE LARGE cloth finishing plant in the South uses about 100 clock-wound production recorders* to make a printed around-the-clock record of production on the various machines. The record shows time, machine, speed, and stoppage (when and for how long).

Yardage counters are used in conjunction with the recorders. The production is about two million yards per week, and the information from the recorders is used primarily in figuring production incentive bonuses. It has proved effective and relatively foolproof.

After the recorder is unlocked, the 6" chart inserted, and the clock wound, a sapphire stylus on a pendulum marks a broad line as the machine runs, and a steady, narrow line during idle periods. No pens nor ink are required. The stylus scratches the chart surface, exposing the underlying backing in a clear mark.

An industrial engineer (only he has access to the clocks) collects the printed charts once every 24 hours and gives them to the time keeper who correlates them with information lifted from the production counters and/or yardage clocks.

The charts cost less than 2½ cents each and provide accurate and permanent reports. Also, the charts are used by mill personnel to determine efficiencies of machines and operators and to pinpoint maintenance, engineering, and quality control problems.

A base rate is established for each machine for an eight-hour period (based on experience); and if the operator exceeds this figure, he is paid a bonus rate on excess over the base.

No maintenance problems have been evident. The recorders have been in use for about 30 years, but in this instance an old model serves quite well.

An eccentric drive from gears driven from the cloth roll actuates the clock pen. The strand of goods moves the cloth roll which actuates the gears to the recorder and yardage counter, and the clock drives the chart.

*Made by The Service Recorder Co.

Dyeing the Synthetics Up-to-Date

Staff report

DYEING and finishing Du Pont synthetic fibers occupied the center of the stage at a two-day conference sponsored by the company in Wilmington recently. More than 300 mill men representing all segments and regions of the wet processing industry were brought up-to-date by Du Pont specialists in Orlon, Dacron, nylon, and Lycra.

The papers spotlighted the breadth of the company's research programs aimed not only at developing new fibers but also at solving practical problems. Two of the most commented-on papers are briefed on the following pages.

Dyeing and Finishing Woven Stretch Nylon Fabrics

by J. W. Lynch
Textile Fibers Department

ALTHOUGH WOVEN stretch fabrics have been used primarily for leisurewear and sportswear activities, their use is now expanding to bowling pants, jackets, gloves, dresses, upholstery, and even men's dress suits. The term "woven stretch fabric" applies to fabrics containing a major percentage of textured stretch nylon—not to fabrics containing rubber or spandex yarns. Their chief appealing properties are comfort and appearance.

Currently there are six basic fabric types on the market:

The elastique or cavalry twill type—a warp stretch fabric—usually has a worsted, woolen, or Orlon acrylic fiber filling in a weight range of 8 to 12 oz per sq yd. The fabrics have a stretch of 25% to 35% and are made primarily for ski pants and riding clothes.

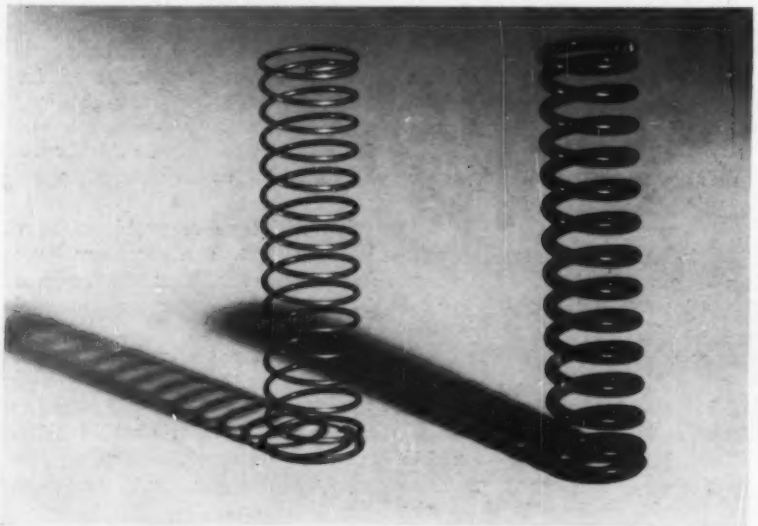
Shantung and gabardine warp stretches have been made with many types of filling yarns, including Dacron and cotton, Orlon and rayon, silk, and all cellulosics. Their weight range is from 6-10 oz per sq yd and their stretch from 25% to 40%. Many of these fabrics are styled for women's slacks and leisurewear.

Fancy yarn dyed warp stretches have been made with solution-dyed black or package ("muff") dyed stretch yarn and a variety of package dyed filling yarns. Fancy fabrics are made in a weight range of 6 - 10 oz per sq yd for children's and women's leisurewear.

Many filling stretch fabrics have used cellulosic or wool fiber warps. The most popular are piece and yarn dyed styles.

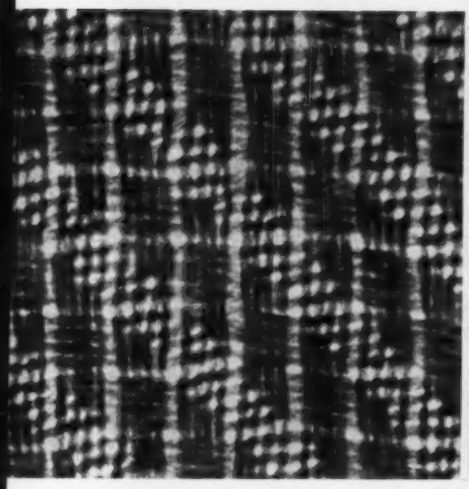
Whether the warp or filling stretch fabric will emerge as the most widely developed fabric is an

The heavy-denier-per-filament concept is well illustrated by two springs, one made of fine-gauge wire and the other of heavier-gauge wire. It is obvious that the heavy wire spring will have more power and resistance to deformation—and so it is with textured yarns.



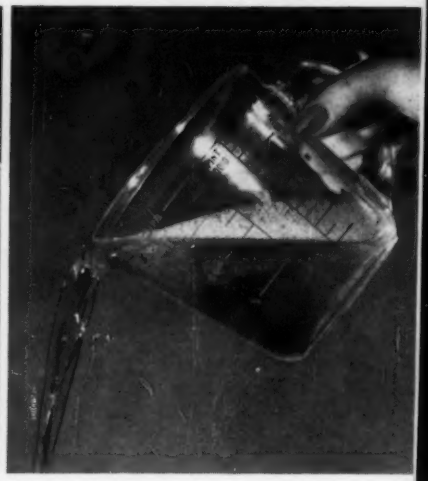
Independent research suggests

New ways A-C Polyethylene can help you

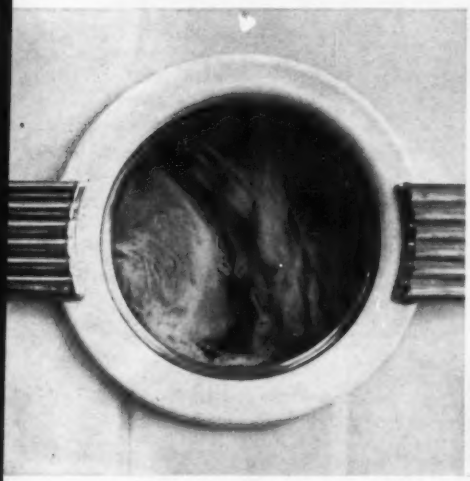


In warp sizes—to reduce friction and increase gliding of yarn on yarn.

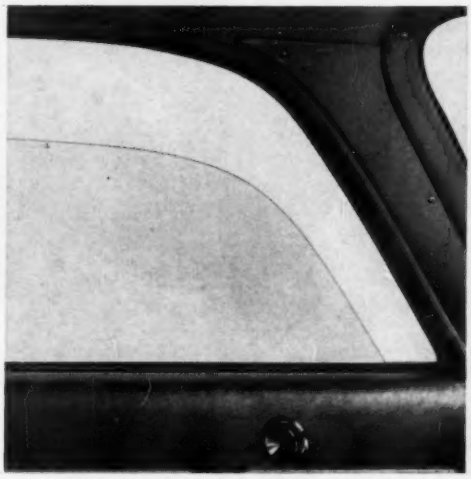
In dry cleaner's soap – to increase tear strength of dry-cleaned textiles.



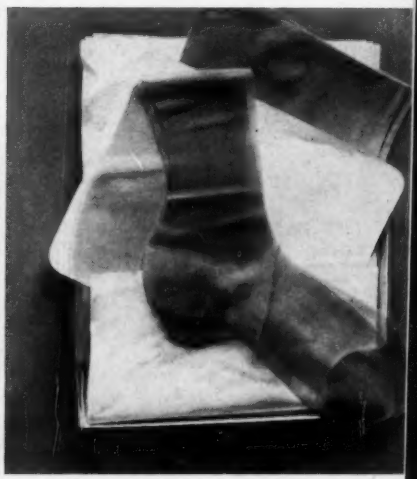
In liquid detergents—to improve tear strength of laundered fabrics.



In laundry rinse water—to improve tear strength and hand of washables.



On auto window linings—to reduce friction of liners against glass.



As anti-snag treatment—for nylon hosiery, sweaters, other textiles.

Latest research studies indicate many new uses for A-C® Polyethylene, the finishing additive so well-known for "taking the tear out of wash-and-wear."

Tests on a variety of fabrics (cotton, rayon, wool, nylon, polyester, acrylic, glass fiber) show substantial increases in tear strength and abrasion resistance when finishes contain A-C Polyethylene. Marked improvements in antifrictional and "hand" properties are demonstrated too.

Other advantages of A-C Polyethylene: emulsifiable in any system—anionic, cationic, nonionic . . . only small percentages required . . . effective through multiple cleaning cycles.

Ask your textile chemical supplier for a finish made with A-C Polyethylene for your specific needs. Or write for information to: Plastics Division, Dept. 618-TI, 40 Rector Street, New York 6, New York. In Canada: Allied Chemical Canada, Ltd., Montreal.

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Finished fabric stretch and recovery test. BELOW: Attach metal clips or other suitable clamps at least 3" wide to each end of the specimen. RIGHT: After 1 hr measure the distance between the original 20-inch-apart marks.

interesting topic of discussion. Since a large percentage of looms is 50 inches wide, a filling stretch fabric would finish at 34 to 36 inches, an unacceptable width for many end uses. On the other hand, warp stretch fabrics generally cost more and are definitely more difficult to dye and finish. There is a market undoubtedly for both type fabrics.

Problems in Finishing. Some problems that the finisher can meet are:

Streaks
Pilling
Poor fastness
Nonuniform stretch and recovery
Inadequate stretch and recovery

Not all of these problems are related to dyeing and finishing. Streakiness can be caused by dye or texture nonuniformities introduced in yarn texturing or in weaving. It can also be exaggerated by fabric construction, poor dye selection, and by poor dyeing procedures.

In selecting dyes for the nonstretch yarn, consider only those that do not stain the nylon. If dye streaks are severe, use disperse dyes, provided that wetfastness requirements are not a limiting factor. If better fastness is required, apply acid dyes by the Avitone T or Alkanol LN method.

Pilling can occur if the filament nylon fibers are broken and become entangled on the fabric surface. Pilling can be affected by fabric construction, denier-per-filament of the nylon, twist, and fabric finishing. Softeners and fiber lubricants increase pilling tendency; resins and fiber bonding agents reduce it.

Select fiber blends to insure a practical dyeing operation and good dyesfastness. Stretch nylon does not overcome blend-fabric dyeing problems; in fact, dyeing may be more complex because of processing restrictions. Thus, every stretch fabric must be carefully considered before dyeing. Select dyes from the three classes—disperse, acid, and premetalized—with end use requirements in mind. But ability to cover streaks is also a requirement: Disperse dyes are excellent; acid dyes, fair to good; and premetalized dyes, poor.

Woven stretch fabrics must have uniform stretch and shrinkage characteristics to prevent serious problems in garment fabrication. Achieving them can be difficult in a warp stretch fabric because of the limited warpwise tension control available on conventional dyeing and finishing equipment.

Woven stretch fabrics have low power or little resistance to initial elongation. This feature is important to comfort but it makes the job of obtaining a completely relaxed fabric difficult. Because nylon has a low modulus—it can be stretched 20% with little force—the fabric can be elongated very easily even in a simple batching operation. Thus, special low-tension tubing apparatus is generally advisable; in fact, extremely critical fabrics ought to be shipped relaxed or flat-folded.

While it is easy to destroy stretch properties by poor dyeing and finishing techniques, there are other factors which contribute to inadequate stretch characteristics:

Fabric construction
Type of nylon yarn
Denier-per-filament of stretch yarn
Type of stretch yarn
Stretch yarn torque and twist
Warping, slashing, weaving
Yarn and fabric storage
Dyeing and finishing

It is important for the grey mill and finisher to remember that *it is impossible* to improve stretch characteristics by finishing techniques.

Fabric Construction. Type of weave as well as construction will affect the relaxation and, hence, the elongation of the stretch yarns. A plain weave tends to restrict bulking action, as does a tightly constructed fabric. A warp stretch fabric with 54 picks of a 20/1 cotton yarn has 35% stretch, but by increasing pickage to 62, stretch is reduced to about 20%.

The number of ends or picks of

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stretch yarn is also important to the contractive ability of a stretch fabric. The power to contract and to resist deformation in dyeing and finishing is related to the amount of textured yarn used, just as the number of ends and picks is related to a fabric's breaking strength. A fabric with an 88-sley warp would not offer the same stretch characteristics as one with a 120-sley warp of the same yarn.

Type of Nylon Yarn. Du Pont Type 288 nylon yarns are recommended for all woven nylon stretch fabrics. They have been engineered to give maximum stretch and recovery properties after false twist texturing.

Dpf of Stretch Yarns. It has been adequately demonstrated that the heavier the denier per filament, the more stretch and better recovery properties the stretch yarn will have. Heavy-denier monofilament yarns are not practical because a point is reached where the yarn is objectionably stiff and wiry. *Table 1* illustrates the effect that denier per filament has on the stretch and recovery properties of textured nylon yarn.

TABLE 1

Yarn Count	DPF	Stretch %	Work Recovery %
70-17-288	4.1	70.4	61.1
70-20-288	3.5	68.1	59.6
70-34-288	2.1	60.2	54.0

The range of four denier per filament appears to be ideal for use in woven stretch fabrics; that is, 70-denier, 17-filament, Type 288 nylon yarn.

Warping, Slashing, Weaving. Minimum and uniform tensions in coning, warping, slashing, and weaving prevent permanent removal of stretch and recovery properties of false twist yarns. In the case of warp stretch fabrics, slashing appears to be a most critical area in the grey mill operation since heat and tension work together to destroy some of the stretch characteristics. Some fabrics are woven with unslashed warps, but most mills apply a light water-soluble PAA or PVA size to improve weaving efficiency. Satisfactory slashing has been done at maximum dry can temperatures of 200 F.

Size formulation:

180 lb polyacrylic acid (PAA)
18 lb Nopcolube 55
Make up to 100 gal with water
Size bath temperature, 120 F
Size pick-up approximately 1.5%
Dry can temperature, 190 -200 F max

Use all yarn and fabric on a first-in, first-out basis. Don't mix different shipments of grey goods in the same dye lot.

Dyeing and Finishing. Because the stretch properties are vulnerable to heat and tension, the finishers' guide for processing should be to use minimum times, minimum tensions, and minimum temperatures.

Following this rule is not always practical. However, some compromise can be made. If the dyeing temperature for a fabric must be 210 F, for example, try to reduce

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New fiber-identifying tints are easy to use, easy to rinse out

POLYMER REPORT

Polymer RINSEFREE® Tints are fugitive sighting colors for identifying lots of fibers during carding, roving, spinning, slashing, weaving . . . also warp overtint. They are easy to use, easy to remove.

Dilution: Dilute to the lightest tint that will provide easy identification. Proportions of water vary from 2 or 3 up to 8 or 10 parts to one part of tint. Simply stir the color into hot or cold diluting water.

Application: Apply with fine spray, drip or wick – as uniformly as possible.

Stability: Tinted yarn or cloth shows no appreciable loss of color for at least 2 years – at temperatures of 60 to 100°F.

Scouring: A cold rinse is often enough. Use lowest practical scouring temperature. Soap or detergent is not generally required.

Matching: RINSEFREE tints are spectrophotometrically standardized for lot-to-lot uniformity.

Storage: Polymer RINSEFREE Tints are supplied as stable water solutions that do not settle out.

Fibers on which RINSEFREE Tints are applicable

Acetate
Acrilan, Type 16 and reg. (Chemstrand Corp.)
Arnel (Celanese Corp.)
Cotton
Creslan (American Cyanamid Corp.)
Dacron (E. I. DuPont)
Darvan (Celanese Corp.)
Dynel (Union Carbide Chem. Corp.)
Kodel (Tennessee Eastman Chem. Corp.)
Nylon 66 or 6
Orlon Types 25, 39, 42 (E. I. DuPont)
Verel (Tennessee Eastman Chem. Corp.)
Viscose
Vycron (North American Rayon Corp.)
Wool
Zefran (Dow Chemical Corp.)

Colors available

Red (5 hues)	Rust
Yellow (2 hues)	Gold
Blue (2 hues)	Green

NOTE: Not all colors are completely rinse-free on all fibers. Removability also depends on whether yarns have been steamed.

Samples: Send list of fibers and blends being used and preferred colors (if any) for each type. We will be glad to send samples of suitable tints – together with complete directions. Polymer Industries' mill-trained textile chemists are available to help you.

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time and tensions to a minimum. And if a fabric must be processed under tension (for instance, in tenter framing), reduce temperature and time to a minimum.

The areas of wet processing which are most critical in maintaining maximum stretch and recovery properties:

1. Continuous preparation and dyeing ranges
2. Singeing
3. Frame drying or curing
4. Carrier dyeing of synthetics
5. Finish application

Processes 1, 2, and 3 should be avoided if possible when processing warp stretch fabrics since the warp yarns are under tension—in many instances under extreme tension—while the fabric is at elevated temperatures.

In dyeing, a carrier may be required if Dacron or other synthetic fibers are present. A pilot-plant evaluation has shown that certain commercially available carriers can be used safely; but others can destroy the properties of warp stretch nylon fabrics during beck dyeing. Latyl Carrier A and Tanavol 4M had little or no effect on these properties. Orthophenylphenol caused a 25% loss in stretch properties when used at the normal 5 g/l concentration. At 10 g/l the stretch properties were completely destroyed. Trichlorobenzene and biphenyl caused only a slight loss in stretch and should certainly be considered in practice.

There is a suspicion that carriers have less influence on filling stretch fabric properties since the textured yarn is not under tension during dyeing.

A temporary or permanent loss of stretch can occur when chemical finishes are applied to achieve the customer's requested fabric hand. The durable types of resin or finish which bond or cement the fibers together cause a marked loss of stretch. However, it appears that some of the so-called non-durable thermoplastic resin dispersions can be used to obtain an increase in fabric body and crispness without objectionable loss of stretch. Fiber softeners and lubricants seem to improve the stretch characteristics of these fabrics.

Stretch Potential — Grey. A method for determining maximum stretch potential in both warp and filling fabrics:

1. Cut a 1-yd head end of grey fabric and protect edges from raveling.
2. Wet out sample in tumbler- or agitator-type washer at 90-100 F for 10 min.
3. Prepare fresh bath with 5 g/l Alkanol HCS and 5 g/l tetrasodium pyrophosphate.
4. Raise temperature from 100 to 180 F and wash for 10 min.
5. Rinse in cold water.
6. Extract in centrifugal extractor.
7. Tumble dry at 160-180 F for 10 min.
8. Put marks on relaxed fabric 10 in. apart, in stretch direction.
9. Stretch by hand to maximum elongation and record distance between marks. (This has been called the "New York Hand Stretch Test.")
10. Maximum stretch potential is then calculated:

$$\frac{\text{Elongated length - original relaxed length}}{\text{Original relaxed length}} \times 100 = \text{Maximum per cent stretch potential}$$

The maximum stretch potential of a fabric cannot be achieved in a commercial dyeing and finishing operation. However, it can be used

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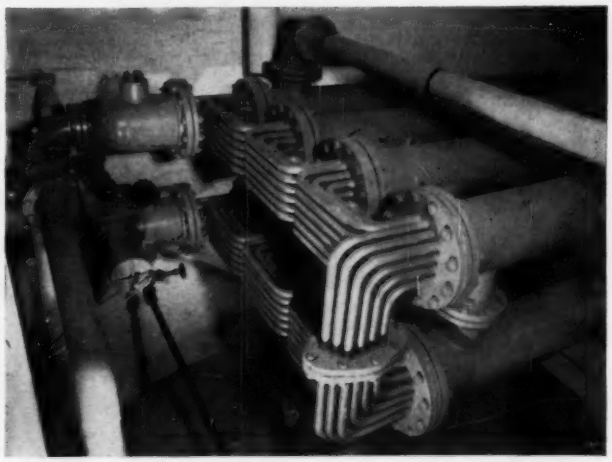

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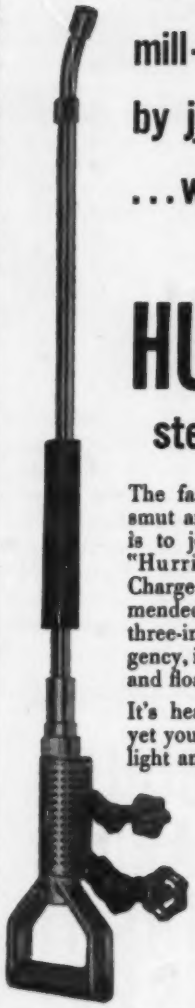

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LIGHT Weighs a mere 6¼ lbs.

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as a processing guide and control. The percentage of the maximum stretch potential actually reached will be different for each fabric and for each mill.

Stretch Potential — Finished. There is an equally simple method for evaluating finished warp and filling stretch fabrics:

1. Cut fabric into 22" x 3" samples for testing. The stretch yarn must be in the 22" direction.
2. Mark 20" lengths on the samples.
3. Attach metal clips or other suitable clamps at least 3" wide to each end of the samples.
4. Hang the sample by one clip and put 5-lb weight on the other. (The 5-lb weight correlates with the "New York Hand Stretch Test.")
5. After 1 hr, measure the distance between the original marks; record as "extended length."
6. Remove the weight and clips and measure the fabric. Allow sample to recover for 6 hr and measure again. Record these lengths as "initial recovered length" and "recovered length." The per cent stretch and per cent unrecovered stretch are then calculated:

$$\frac{\text{Extended length - original length}}{\text{Original length}} \times 100 = \text{Per cent stretch}$$

$$\frac{\text{Recovered length - original length}}{\text{Original length}} \times 100 = \text{Per cent unrecovered stretch}$$

Dyeing and Finishing. These are the dyeing and finishing techniques for a warp stretch gabardine-type fabric suitable for women's wear:

Construction

Warp—108 ends/in., 70-17/2-ply 12/12/12 textured Type 288 nylon
Filling—68 picks/in., 26/1 Orlon Type 72/ cotton
Grey width—48"
Stretch potential—55%

Procedure

1. Quality control check—stretch potential.
2. Tack in tubular form.
3. Beck scour.
4. Rope dye—210 F.
5. Apply Avitex NA softener in beck.
6. Centrifugally extract.
7. Dry relaxed—250 F.
8. Steam frame (20% overfeed) to remove wrinkles.
9. Semidecate.
10. Inspect and tube with minimum tension.
11. Quality control check—stretch and recovery.

Orlon-and-cotton-filling fabrics are generally tacked to prevent rope marks during dyeing at the boil. The following procedure can be used in dyeing and finishing:

1. Scour on the reel at 160 F for 30 min with
   1.0% Alkanol HCS
   1.0% trisodium phosphate
   1.0% ammonia
2. Set a fresh bath at 110 F with
   0.1 g/l Alkanol HCS
   0.1 g/l sodium acetate
   2.0 g/l anhydrous sodium sulfate
   1.0% acetic acid (pH 5.0)
   -% Du Pont Retarder LAN
3. Run 10 min
   Strain the dissolved Sevron dyes into machine
   Raise temperature to 180 F at 3°/min
   Raise temperature to boil at 1°/min
   Run for 1½ hr
   Dye to shade on the Orlon
4. Run cooling to 160 F; rinse
5. Scour at 180 F for ¾ hr with
   0.1 g/l Alkanol HCS
6. Dye nylon and rayon with neutral dyeing acid and fast-to-light direct dyes at 185 F using
   3.0% Avitone T and common salt
   Rinse and apply dye fixative if required
7. Apply 0.5% Avitex NA softener finish from a fresh bath at 130 F for 20 min
8. Drain—do not rinse

The fabric after finishing will have these characteristics.

Stretch—40%
Recovery—3.9% unrecovered stretch
Shrinkage—1.7% warp; 0.5% filling
Width—46"
Pilling—4.2 rating (slight pilling)

Continued on page 181

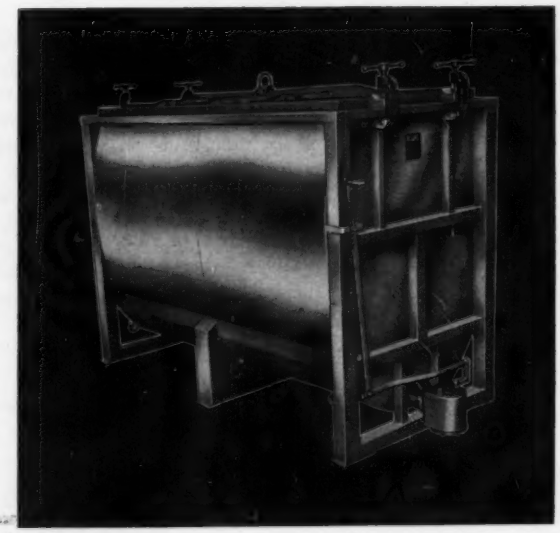
QUALITY MACHINES FOR QUALITY DYEING

KWG DUO-FLO SUSPENDED-SKEIN DYEING MACHINE

Specially designed for dyeing and processing of yarns such as high bulk Orlon where controlled shrinkage is a factor . . . equally applicable to other synthetic and natural yarns.

- **All-stainless steel construction with new curved tub for maximum service life**
- **Continuous and automatically reversed dye flow cycle**
- **Patent-applied-for dyesticks prevent stick marks—adjust to meet skein length and shrinkage requirements**
- **Space-saving, slide-up doors permit faster, easier loading and unloading**
- **Capacities of 200 and 400 lbs.**

Paddle wheel machines in sizes from 2 to 850 lbs. Reel Type Skein machines from 75 to 1000 lb. capacities. Tape dyeing machines for narrow fabrics. Depend on KWG for the best in dyehouse equipment.



Klauder Weldon Giles **MACHINE COMPANY** *Adams Avenue and Leiper Street, Philadelphia 24, Pa.*

COLORING, BLEACHING, AND FINISHING DEVELOPMENTS

Crimping and Coiling Nylon 6 Yarns. A National Bureau of Standards research worker reports that crimping and coiling of nylon 6 yarns can be induced by inserting disulfide and alkylene sulfide cross-links into the swollen fiber, then drying it. Gradual oxidation by exposure to air may destroy the crimping and coiling effects, but certain chemical treatments are possible to effect stabilization.

Lithium Hypochlorite Bleach. Lithium hypochlorite has been developed as a dry bleach, said to be suitable for home, commercial, or institutional laundries. The new product has 35% available chlorine and is reported to be equal to sodium hypochlorite liquid bleach and superior to chlorinated cyanuric dry bleaches. When protected against moisture and carbon dioxide, stability of this bleach is good.

Vibrator for More Efficient Processing. The Riggs & Lombard Vibrator unit, adaptable to many processes, is claimed to provide more efficient processing of conventional fabrics, particularly the newer synthetics and blends. Open width processing may be used, avoiding rope marks and cracks met in rope processing procedures.

Coating Elastic Fabrics. Bauer & Black Div. of Kendall Co. has developed a process for transferring raw elastomer into a spandex-type coating on finished fabric. Particles of polyurethane are deposited in such a manner that they are not completely coalesced in the coating, leaving an infinite number of "pores" to provide breathability.

Wash-Wear Silk. Permel Resin W is being used by at least one eastern dyer to provide wash-wear finish on all-silk fabrics. Application is by a conventional padder followed by flash curing at 700 F. It is claimed that there is no strength loss and dyes and prints show improved color fastness.

Ultrasonic Finish for Hosiery. An American hosiery manufacturer has announced plans to introduce revolutionary new women's hosiery processed by ultrasonics. It is claimed that the method yields reduced gloss and improved moisture absorption and stretchability. The process is reported to have been in use abroad for some time.

Less Textiles Finished. Figures just released by the Bureau of the Census show that there was a drop of 7% in the amount of cotton, silk, and man-made fiber woven goods finished in 1960 compared with 1959 — from 10.11 billion linear yards to 9.43 billion. The yardage of cotton, rayon, and acetate fabrics finished for crease resistance or wash-and-wear properties also fell slightly, from 2.36 billion to 2.23 billion. Some detailed figures are given in an accompanying table.

Cotton, Silk, and Man-Made Fiber Broad Woven Goods Finished, Million Linear Yards

	1960		1959	
	Cotton	Silk and Man-Mades	Cotton	Silk and Man-Mades
Bleached and white finished	3,138	285	3,338	254
Plain dyed and finished	2,430	1,520	2,650	1,649
Printed and finished[1]	1,752	304	1,903	318
TOTALS	7,320	2,109	7,891	2,221

[1]Includes roller, screen, flock, and block printed

Source: Bureau of the Census

Breathable Aluminized Fabric. The British Shirley Institute claims to have produced a new aluminized fabric which is breathable. Potential uses are seen in protective clothing, blankets, and apparel. High thermal reflectivity to heat and light are retained.

Rot-Proof Finish. The Ciba Co. has developed a new rot-proof finish for cellulosic fabrics normally deteriorated under severe moisture and atmospheric conditions or in contact with earth. The new finish, said to be linked to the fabric by rapid chemical fixation, causes no change in fiber structure properties and no fabric strength is lost. The product is claimed to be non-leaching, odorless, and does not require an after-wash.

Continuous Bleaching. Olin Mathieson Chemical Corp. reports success in initial tests of a new Textone (sodium chlorite) continuous bleaching process for both natural and synthetic fibers, with speeds at one mill of up to 450 ypm, double strand. Costs are said to be equivalent to or less than conventional methods. Sodium chlorite was formerly limited to batch processes, because of corrosion and odor problems.

New Standards. Three revised American Standards recently approved include "Resistance to Water Penetration" (L14.78-1960); "Colorfastness to Water: Distilled or De-ionized Water, Sea Water, and Chlorinated Pool Water" (L14.83-1960); and "Colorfastness to Pleating (L14.63-1960).

Brighteners for Synthetics. Two new fluorescent brighteners, Blancophor MO-89 for polypropylene and Blancophor AM-80 for acrylics, are available in experimental

WHY MORTON?

Quality Conscious Mill Men prefer Morton because:

1 **HEAVIER KIER.** Morton System Dyeing equipment is ruggedly constructed of Type 316-18-8 SMO Stainless Steel. All products are designed and built to comply with the ASME code and are authorized to bear appropriate code symbols.

2 **BETTER FLOW PRESSURE.** Even, unrestricted flow of dye liquor on inside-out and outside-in cycles assures complete penetration of packages and therefore more efficient operation.

3 **LEVEL SHADES.** Efficient, automatically controlled Morton Dyeing Equipment provides level shades day-in and day-out, at temperatures up to 300° F.

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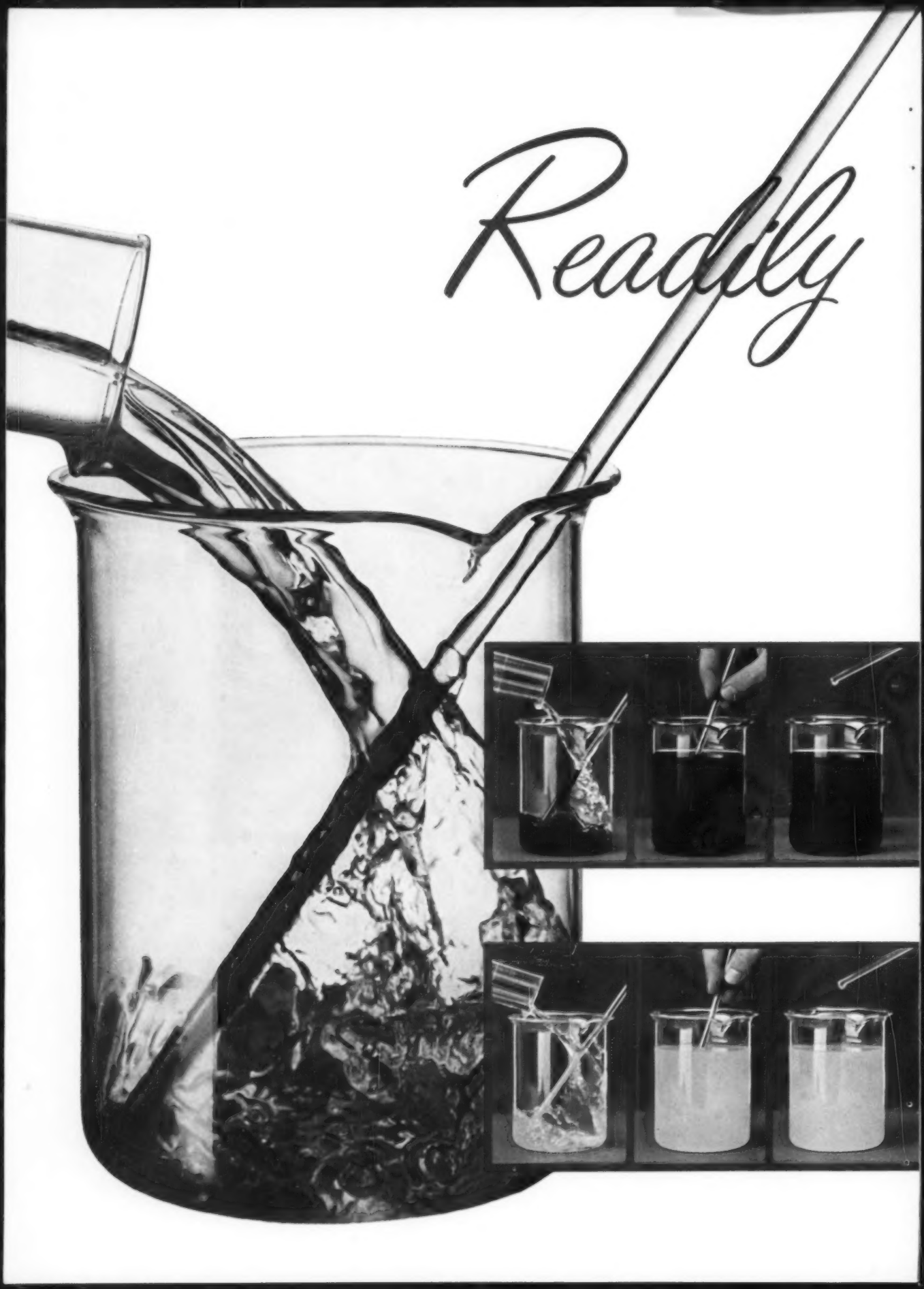
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Redispersible!

another important reason to specify

CARBANTHRENE® VAT DYES

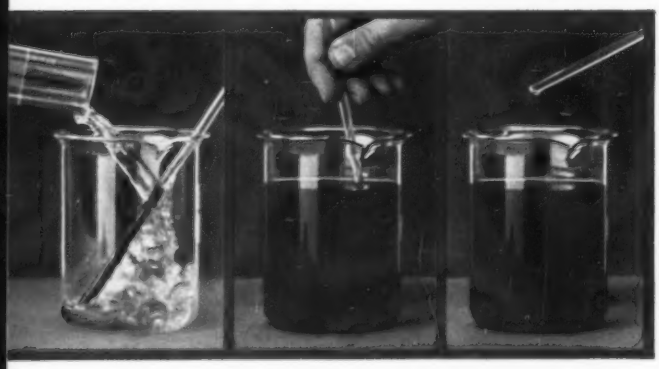
Within seconds, dried particles of National Aniline's Carbanthrene Vat Dyes redisperse in water at room temperature.

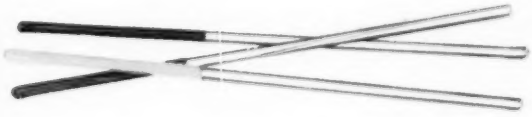
The same rapid redispersion takes place in stored drums . . . in your pad box . . . in package dyeing machines. As a result . . .

- piece goods are dyed clean and speck-free . . .
- there are no agglomerates to filter out on package sides . . .
- dye waste, spoiled goods and need to re-dye are minimized.

Redispersibility is one more working advantage developed through our continuing quality-improvement program. It's another big reason why uniform, fine-particle Carbanthrene Vat Dyes are truly second to none.

Ask a National Aniline representative for samples of the colors you use regularly.





Double pastes of Carbanthrene Blue BCF, Red FBB and Yellow PG were dried on stirring rods. When tap-water was poured over them, all three rods were clean in a matter of seconds. Almost immediately, the dried pastes had completely redispersed.

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Dyeing Knit Swatches. Uniform dyeing of small swatches of knitted fabric can be done easily by method developed in Switzerland. Samples 5" x 5" are sewn by hand to stainless steel gauze; gauze and sample are rolled into a cylinder, held in shape by screws, and dyed in a stainless steel container.

Licenses Sulfones. J. P. Stevens & Co. is licensing its patents in sulfone chemistry to textile finishing plants. Divinyl sulfone and its derivatives are used as wash-and-wear finishing agents.

Wash - and - Wear "Comeback"? "Improved finishing techniques and intensified promotional activities are being counted upon to revive consumer confidence in wash-and-wear cottons," according to William A. Gray, assistant vice-president of Commercial Factors Corp. "Consumers will find out that the new wash-and-wear fabrics will do everything that is claimed for them," he said, citing the cross-linked finishes as those which will lead the parade.

Hydrazinium Softners. New process which will reduce manufacturing costs 30% for hydrazinium-based textile softeners is announced by Moretex Chemical Products, Inc. Mortex markets the nonyellowing softeners under the trademark "Aquazine."

Printed Foam. Riegel Textile Sales Co. has developed technique for printing foam used in laminates. Both sides of the laminate can be printed for a reversible look.

New Dyes and Chemicals

Dye-Resist Material for Carpeting. Availability of a chemical resist material on a license basis has been announced by the Chemstrand Corp. Applicable to Cumuloft nylon yarns and fabrics made from them, the product makes the textiles resist acid dyes but accept disperse dyes; so, a wide variety of color effects can be obtained in a single dye bath. Applicable to fabrics in a pattern or over-all by spraying, the product may be used also on yarns in package or skein form. Use of it permits carpet manufacturers to reduce inventories, as they can hold carpeting in the grey and dye it in patterns which are popular at the time of sale. *(M-1)*

Wool and Nylon Dyes. Two bright acid dyes, Kiton Fast Blue FGL and Kiton Fast Blue SRL, have been introduced by Ciba Co., Inc. The former, which is greenish in hue, is particularly recommended for dyeing Ban-Lon to minimize barré effects and to leave polyester fibers reserved; for dyeing carpet yarns and fabrics for dresses and home furnishings; and for brightening purposes in Neolan dyebaths. The latter, which produces a blue shade of reddish cast, is for dress goods, furnishings, upholstery fabrics, and wool and fur

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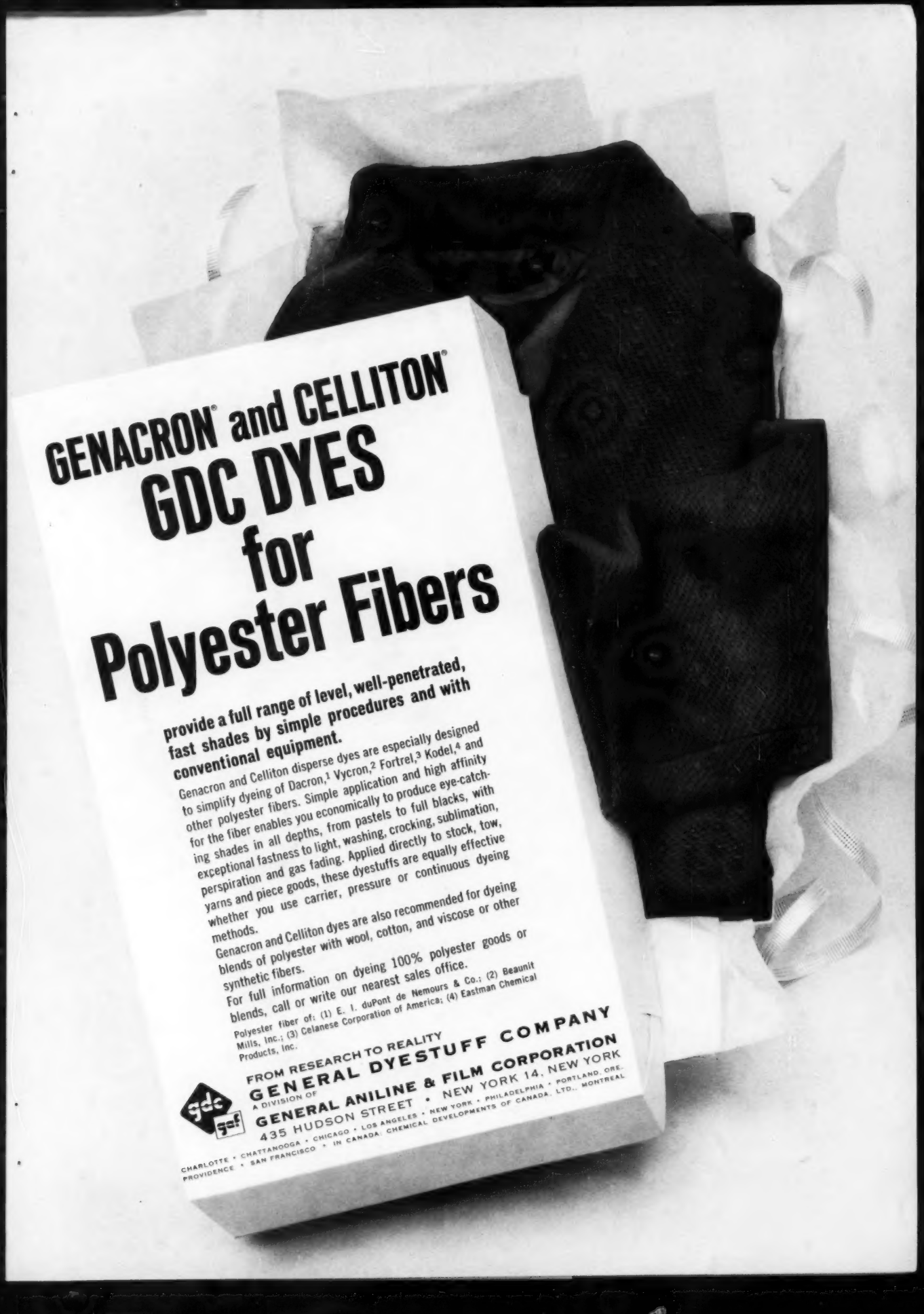
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provide a full range of level, well-penetrated, fast shades by simple procedures and with conventional equipment.
Genacron and Celliton disperse dyes are especially designed to simplify dyeing of Dacron,[1] Vycron,[2] Fortrel,[3] Kodel,[4] and other polyester fibers. Simple application and high affinity for the fiber enables you economically to produce eye-catching shades in all depths, from pastels to full blacks, with exceptional fastness to light, washing, crocking, sublimation, perspiration and gas fading. Applied directly to stock, tow, yarns and piece goods, these dyestuffs are equally effective whether you use carrier, pressure or continuous dyeing methods.
Genacron and Celliton dyes are also recommended for dyeing blends of polyester with wool, cotton, and viscose or other synthetic fibers.
For full information on dyeing 100% polyester goods or blends, call or write our nearest sales office.
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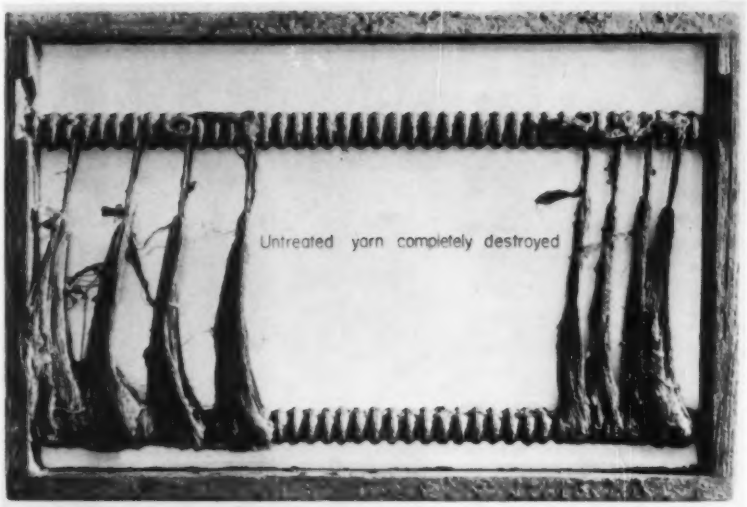
hats. Both dyes have excellent build-up properties and very good light fastness. *(M-2)*

Three Fiber Reactives. Now available from Carbic-Hoechst Corp. for dyeing cellulose and polyamide fibers are three new Remazol dyestuffs developed by Farbwerke Hoechst AG. With Remazol Yellow GR brilliant yellow shades of high intensity can be obtained by exhaust, padding, and continuous processes. Outstanding fastness to light, washing, and perspiration is claimed for the product which is recommended especially for fashionable brown and olive green shades in combination with Remazol Brilliant Violet 5R and Remazol Brilliant Blue R respectively. Pure greenish yellow shades of remarkable light and washing fastness are said to be obtained with Remazol Yellow GGL which can be applied by printing, padding, and exhaust processes. Remazol Brilliant Red BB provides brilliant bluish red shades with good light and wet fastness and is applicable by exhaust, padding, and printing processes. It is especially recommended for preparing brilliant pink shades fast to light. *(M-3)*



Durable rot protection is given to cellulosic fibers by Arigal C, a new product of Ciba Co., Inc. The finish, which chemically links with the fiber, can be applied continuously, with no after-wash. It has no effect on hand or color, does not cause shrinkage, and does not impair the fabric's ability to "breathe." The yarns in this photo were treated with Arigal C and then buried for two years in a European river bank. They are completely intact; the untreated yarns have completely disappeared. *(M-8)*

Optical Brightener. Hiltamine Arctic White Acid Stable, an optical brightener reported to be especially effective for whitening cotton, rayon, and resin-finished goods, has been announced by The Hilton-Davis Chemical Co. Designed for use in direct padding, resin-finish formulations, and exhaustion dye baths, the product is said to be safer and easier to handle, stable to storage for prolonged periods at normal temperatures. *(M-4)*

Durable Binder, Finish. Shawinigan Resins Corp. has announced Resin D-886, a vinyl emulsion which is said to provide extremely tough, flexible films that are highly resistant to water and organic solvents and have excellent pigment binding characteristics. As a binder for nonwovens, the product gives a relatively stiff hand with excellent resistance to repeated washings and to dry cleaning. An extremely durable finish is produced on cotton sheeting, denims, and heavier fabrics. Long-lasting crispness results when product is used to finish lawns, dimities, and lightweight fabrics. *(M-5)*

Dyeing Aid for Wool and Nylon. Superb wetting qualities and excellent dye penetration, even where shrinkage occurs, are claimed for Lanamol CW, a dyeing aid for use with wool and nylon fabrics and yarns. Produced by Allied Chemical's National Aniline Division, the product is reported to offer these advantages also: full and level dyeing,

Continued on page 133

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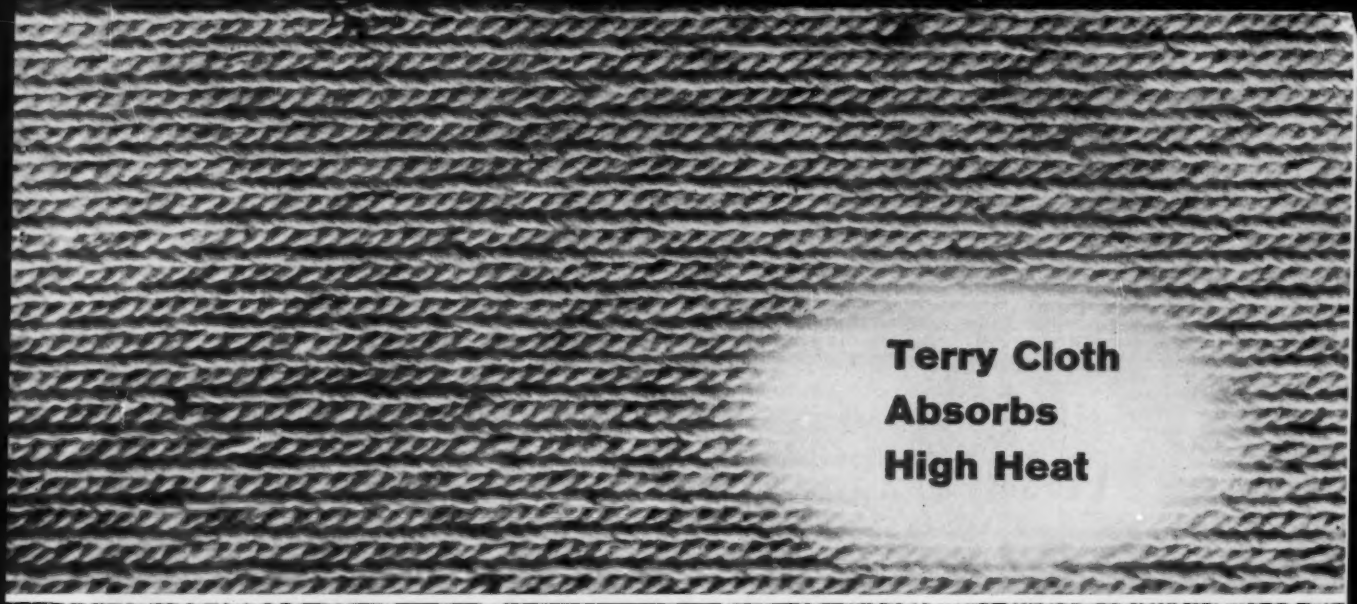

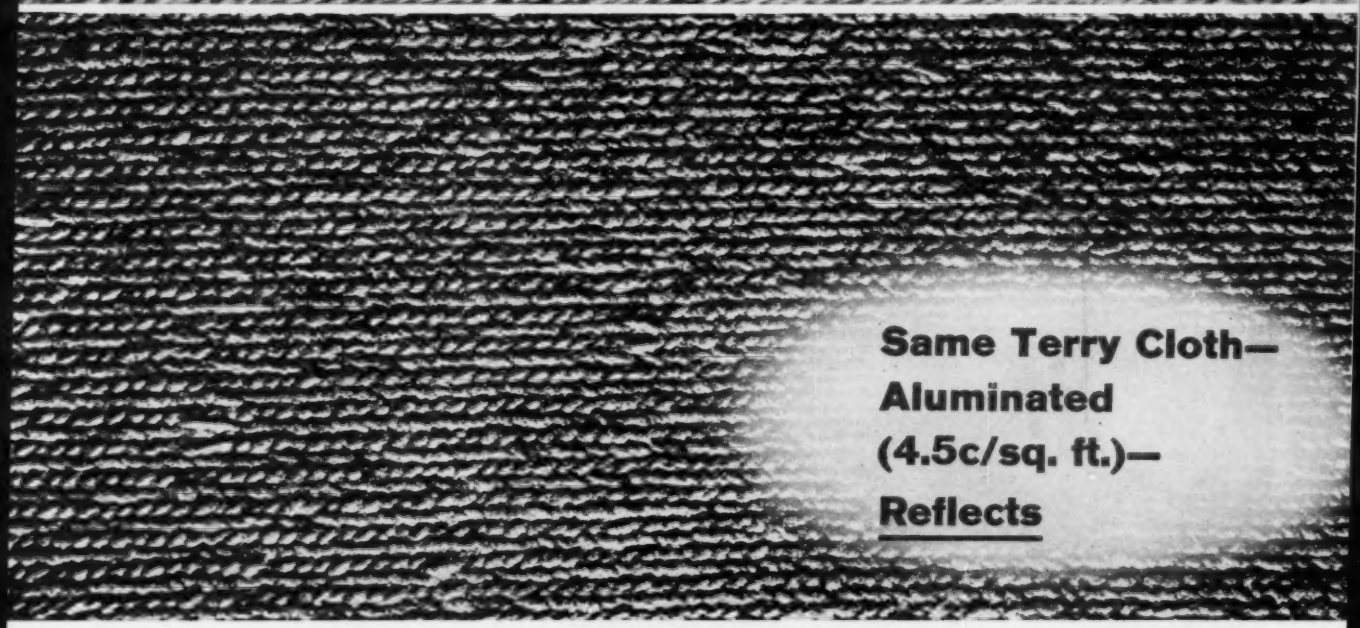

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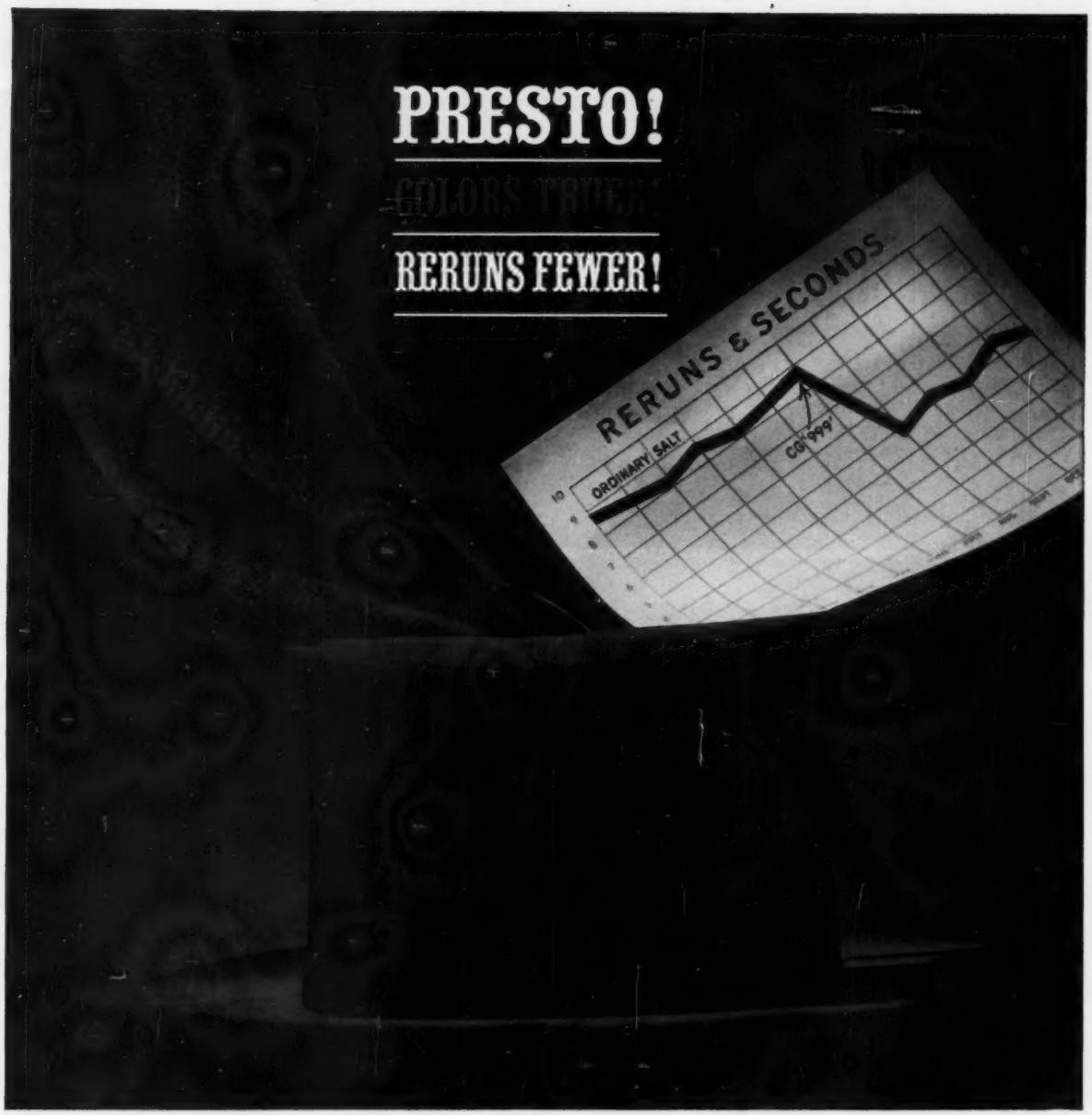

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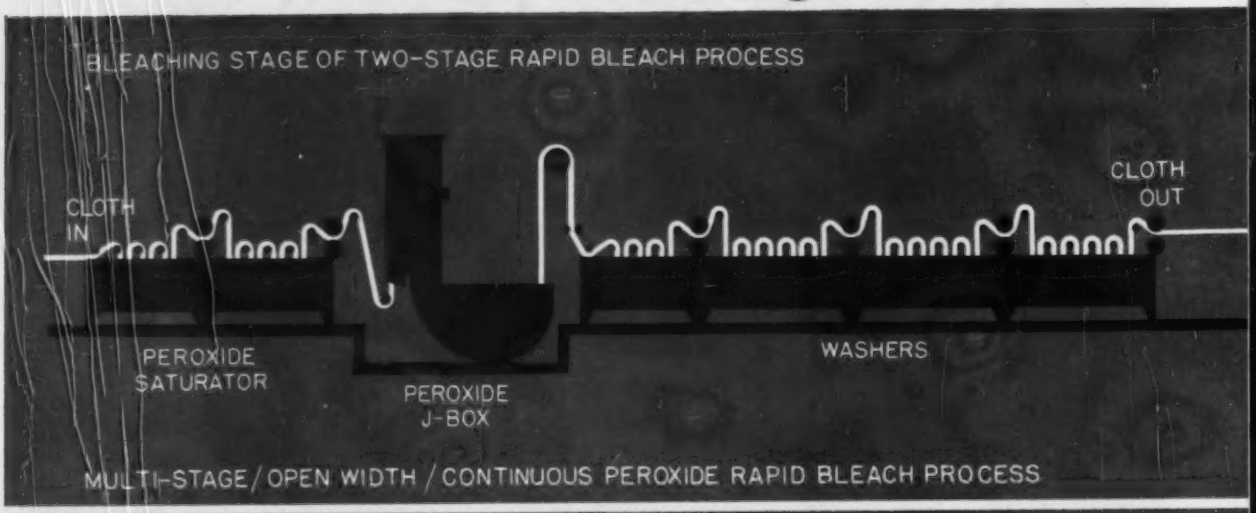

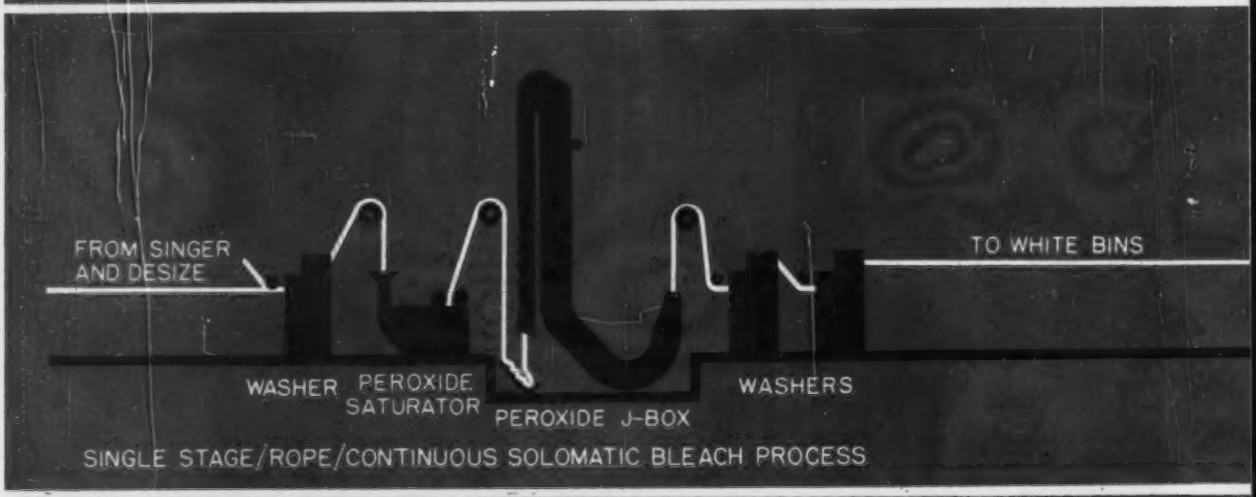

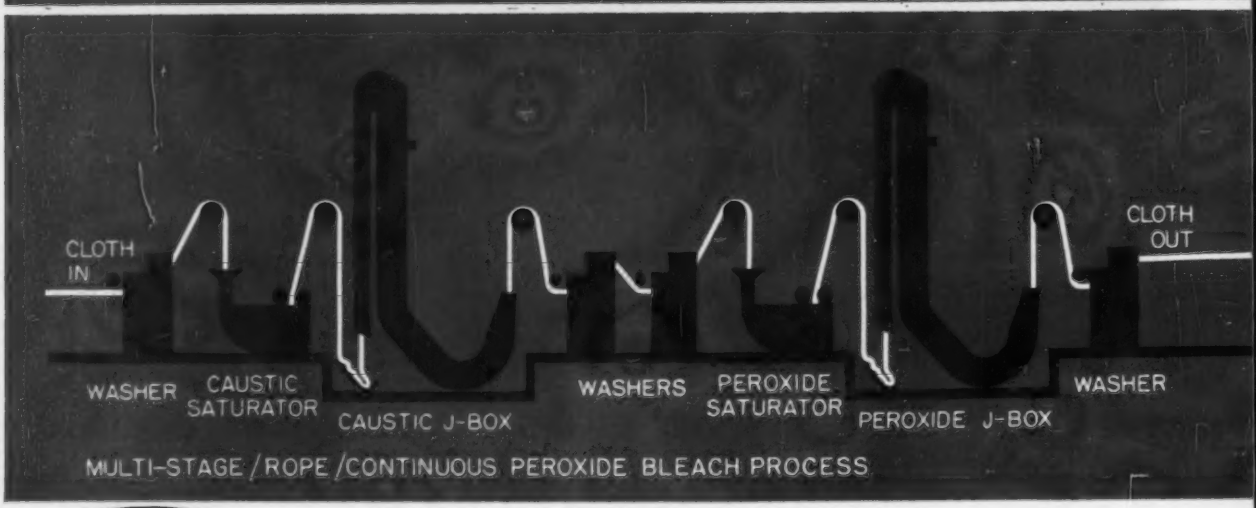

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one of these Du Pont processes

Whether your textile mill is large or small, the basic units shown here can be tailored to your needs. For example, they can be expanded to include desizing, acid souring, drying and/or mercerizing, or designed to fit available floor space.

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◀**RAPID BLEACH PROCESS** handles medium- and heavy-weight cottons and certain synthetics. Replaces slow, costly jig process. Two stages require only 8 minutes each for cloth storage in caustic scour and peroxide bleaching. System cuts J-box costs up to 50% and reduces headroom requirements.

◀**SOLO-MATIC BLEACHING PROCESS** employs minimum equipment for handling medium- and lightweight cottons, colored yarns and cotton-synthetic fabrics. This compact, single-stage system uses highly alkaline hydrogen peroxide. For many fabrics, it eliminates the need for a caustic prescour. Occupies only 60% of space needed for two-stage range and can be operated by one man. Less power, steam and labor required.

◀**MULTI-STAGE BLEACHING PROCESSES** include both rope and open-width systems for large-volume production of medium- and some heavy-weight cotton fabrics. Utilizes simple chemical treatment in each stage. Can be set up to handle cloth speeds exceeding 250 yards per minute, to produce from 1,000 to 6,000 pounds of bleached cloth per hour, depending upon your individual plant requirements.

NEW BOOKLET AVAILABLE! For more information, contact your nearest Du Pont technical representative, or write for new booklet* which details all of Du Pont's continuous bleaching processes. Du Pont, Electrochemicals Dept., Peroxygen Products Div., Wilmington 98, Del.

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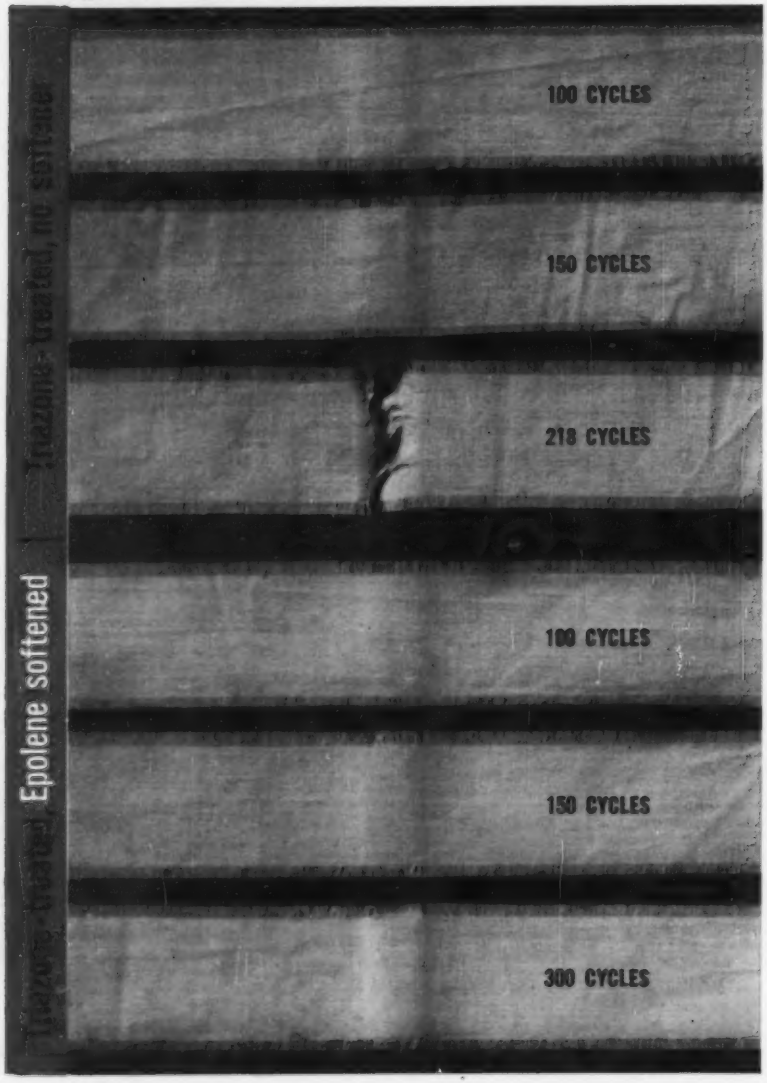
PERDOX®
sodium borate perhydrate

OXONE®
monopersulfate compound

Sodium Perborate Tetrahydrate

The Stoll-Flex Abrasion Test demonstrates the increased strength given to a resin-treated cotton fabric by an Epolene softener.

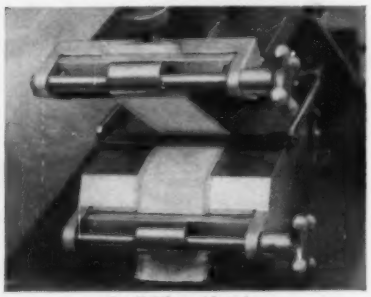


IT is axiomatic in the textile industry that the finishing resin alone does not a wash-and-wear fabric make. In fact, the variables are many, and often complex.

Of primary importance is selection of the softener. If properly chosen to match the specific type of finishing resin to be used, the combination can provide the optimum in tear strength, abrasion resistance, crease recovery, hand, and sewability for the treated fabrics.

Eastman offers three emulsifiable types of polyethylene resins for use as softeners... Epolene E-10, Epolene E-11, and Epolene E-12. These low-molecular-weight polyethylenes are suitable for either nonionic, anionic, or cationic systems, easily forming emulsions that are stable and low in color.

Epolene polyethylene emulsions have been evaluated under operating conditions with all of the principal wash-and-



Stoll-Flex Abrader

wear resins in use today. These include triazone, triazene, melamine formaldehyde, methylated melamine formaldehyde, dimethylol ethylene urea, and methylated urea-formaldehyde type finishing resins. The results of these test procedures are available to aid you in selecting the right softener for your finishing requirements.

For further information about Epolene textile emulsions, their preparation and use, contact your Eastman representative, or write Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tenn.

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SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; Atlanta; Boston; Buffalo; Chicago; Cincinnati; Cleveland; Detroit; Greensboro, N. C.; Houston; Kansas City, Mo.; New York; Philadelphia; St. Louis. **Western Sales Representative: Wilson & Geo. Meyer & Company,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

For further information use Handy Return Card, Page 175

complete dye exhaustion, and a freezing point of -15 C. *(M-6)*

Brown Fiber Reactive. Cibacron Brown 4 GR, another new fiber reactive dye of Ciba Co., Inc., produces a pure yellowish brown shade. Product is said to be particularly useful in printing as it shows excellent solubility and light fastness and printing pastes containing it show very good stability. The metal-free dye is also suitable for all types of application. *(M-7)*

Antistatics for Wool, Synthetics. Two new antistatic lubricants for woolens, worsteds, and synthetics are reported to have excellent antistatic properties and fiber-to-metal lubrication. According to Emery Industries, Inc., "Emerstat 7450" features fiber to-fiber lubrication, and "Emerstat 7451" features fiber-to-fiber cohesiveness. *(M-9)*

Zinc Chloride. Zinc chloride is now available in rubber-lined tank cars or 55-gal polyethylene-lined drums from Pearsall Chemical Corp. It is supplied in 53° and 72° Bé solutions, to three standard specifications. *(M-10)*

Fine-Particle Disperse Dyes. A new series of extra-fine particle disperse dyes has been introduced by Interchemical Corp. under the name Interchem Hisperse. With these dyes, many synthetic fabrics can be dyed in the grey, eliminating a separate boil-off by simultaneous scouring and shade developing. For the time being, there are eleven shades in the range. *(M-11)*

Silk Screen Adhesive. A new silk screen flocking adhesive, Floktex, is claimed not to clog screens and to eliminate downtime, according to its producer, Adhesive Products Corp. *(M-12)*

Plasticizer. N-acetyl ethanolamine, a plasticizer and conditioning agent, is now available in commercial quantities from Aceto Chemical Co., Inc. *(M-13)*

Softeners. Two new textile softeners have been announced by the Organic Chemical Division of Emery Industries, Inc. Emersoft 7705 is a nonionic paste softener developed from Emersoft 7700 Special. It features ready dispersibility and low unit cost. Emersoft 7710 Softener Base is a 100% active material that forms a cationic-nonionic paste softener by mixing with dilute acetic acid. *(M-14)*

Water-Repellent. A water-repellent polymer designed to stand up under both laundering and drycleaning has been introduced by Argus Chemical Corp. Called Argus DWR, it is described as a white, nonionic, reactive emulsion polymer of fine particle size with a solids content of 43-45%. It can be used on natural or synthetic fibers. *(M-15)*

Epoxy Diluent. For its first entry into the epoxy resin field, Antara Chemicals Division of General Aniline & Film Corp. has announced an epoxy diluent—Agent AT-534. The product is a low-cost, nontoxic epoxy reactive diluent which effectively reduces the viscosity of liquid epoxy systems. *(M-16)*

Antistatic Liquid. Atlas G-3634 is a 100% active liquid antistatic agent, suitable for both natural and synthetic fibers. Since it is also an emulsifier, it can be compounded with mineral oil to make a combination lubricant-antistatic agent. It's available from Atlas Chemical Industries, Inc. *(M-17)*

Flameproofer. An agent which durably flameproofs acetate as well as other synthetic fibers (it is not suitable for cotton or rayon) is being marketed by Apex Chemical Co., Inc. Called Flameproof #462, it is a clear liquid compound which emulsifies readily in water; application during dyeing is recommended. *(M-18)*

◆ *For more data on any of these dyes and chemicals, write supplier or use postage-free card on page 175, listing in space provided the code (M-1, M-2, etc.) in parentheses at end of descriptions.*

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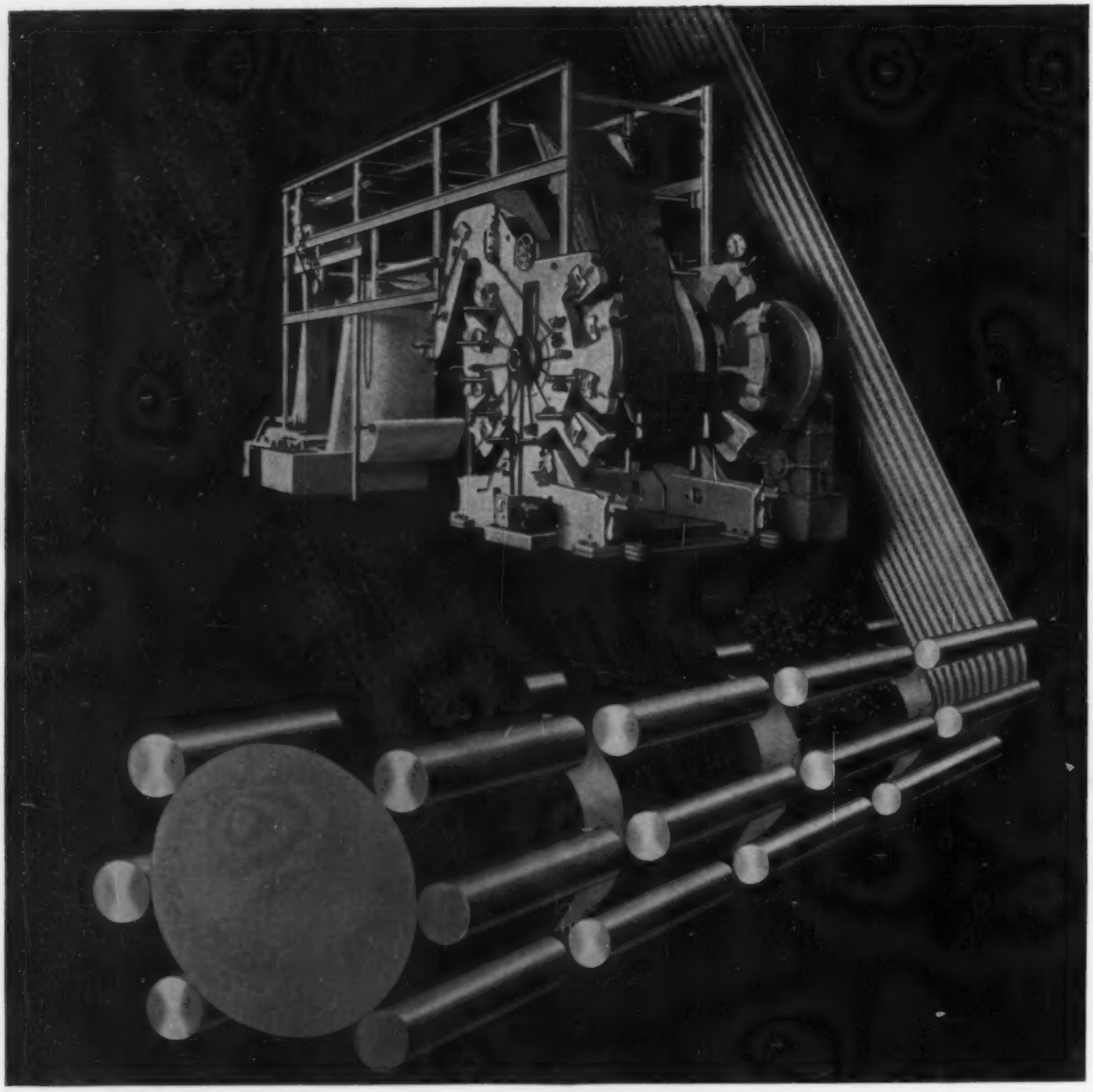

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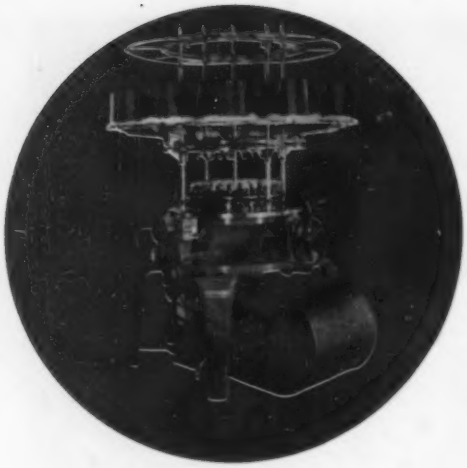

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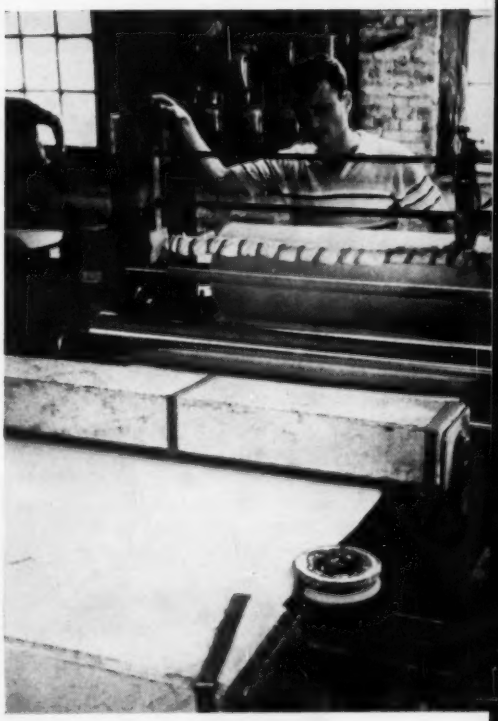
KNITTING SECTION

High road to high fashion

The Fair-Tex approach: Appraise all the new fibers on up-to-date machinery



Latest fabric development is a Creslan double knit. Here it goes through a tensionless calender, where it needs little steam to give it a smooth appearance. Fair-Tex uses 10,000 lb of Creslan a week.

Staff report

"EXPAND." That was the single-minded policy of five-year-old Fair-Tex Mills, Inc., in 1951. It had been the policy since president Reuben Berman started operations with a capital of $12,000.

Proof that it was a workable policy: Within a few years, Fair-Tex sales passed the half-million-dollar-a-year mark.

But in 1951, additional scope was given to the company policy —it no longer meant just an expansion of knitting production. Until then Fair-Tex had been just another manufacturer of staple fabrics. Now Mr. Berman decided that opportunity lay in building a highly flexible operation capable of meeting the demands of entirely new markets.

In this scheme, "expansion" took on a far different meaning.

In a swift, though calculated move, Mr. Berman relocated his knitting machinery from a plant in Cliffside Park, N. J., to a bigger one in Catasauqua, Pa., and thereby set the stage for an operation that has become unique in the knitting industry. With 65,000 sq ft at his disposal, he soon installed dyeing and finishing equipment, and organized a quality control department to insure that all outgoing fabrics and finishes met specifications.

Synthetics Take Over. As the next step in his plan, Mr. Berman organized a styling division, which has become of ever-increasing importance in the company's profit picture. As new synthetic fibers and yarns became available, their place in the Fair-Tex picture was evaluated immediately.

In time, Fair-Tex discontinued its bread-and-butter line of cotton staples, which once accounted for its entire production. Today, the Fair-Tex fabric collection consists of more than 100 high-fashion fabric styles, created from virtually every synthetic fiber and blend

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***Trademark for Chemstrand's acrylic fibre.

490-O

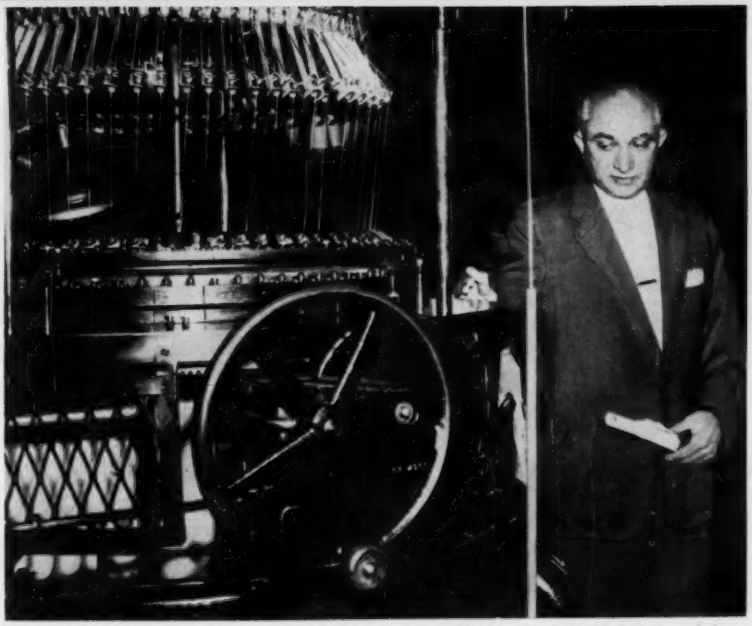
For further information use Handy Return Card, Page 175

suitable for knitwear. During a season, as many as 200 styles may be passing through the plant in various stages of experimentation, development, and production.

Such styling innovation, as President Berman calls it, requires a wide range of knitting equipment and a going program of practical experimentation, where new yarns are constantly evaluated on machines of latest design. This formula for providing markets with new creations began to succeed almost immediately at Fair-Tex, resulting in a continual growth of production.

The year after the company moved to Catasauqua saw the start of a noticeable shift in fiber consumption. Synthetic yarns then accounted for 10% of the mill's production. By 1956, however, the figure rose to more than 50%. Today synthetics account for more than 75% of production—a sizable poundage of yarn when it is considered that Fair-Tex can knit, dye, and finish about 20,000,000 yd of fabric a year.

To show how rapidly the plant expanded, in 1955 there were 150 machines in operation, compared with the original 45 which Mr. Berman moved to the Catasauqua plant in 1951. Today, Fair-Tex operates more than 300 machines of 15 different designs.



President Reuben Berman in 15 years built Fair-Tex Mills from a $12,000 investment to a multimillion-dollar organization and a leader in the high-fashion knitted fabrics field.

"Innovate or Perish." A recent press tour of Fair-Tex Mills gave a chance for a close look at an organization whose perennial goal is styling innovation. Management philosophy was clearly outlined by President Berman, as he conducted the tour:

"The secret of success is to be new and different," he said, "willing to experiment in order to provide high-fashion quality merchandise on a volume basis. U. S. mills can no longer compete with foreign sources on staple items alone, and must offer new ideas or perish."

Among the 300 knitting machines in his plant, which stylist Klara Havas has at her disposal, there are Tompkins spring needle units, a complete range of Supreme machines covering plain multifeed knitters, body width units, pattern wheel machines, and the latest sinker-top models equipped with automatic stripers and tuck bars.

Supplementing the battery of Supreme machines are Brinton plain and fancy pattern jersey units; and there is a group of Wildman ribbers, in addition to small-diameter units for knitting cuffs, trims, and strapping.

Double Knit: No Gimmick. Among the latest equipment, there is a group of Morat units, which produce the popular and functional double knit fabric. Mrs. Havas places the double knit in a class apart, not to be confused, she says, with promotional novelties or gimmick fabrics. Fair-Tex uses these machines to produce high-fashion quality fabrics. Among the styles in current production there is a fabric of 100% Creslan, American Cyanamid's acrylic fiber, which is a most recent styling development.

Mrs. Havas pointed out that Creslan is being used by Fair-Tex in numerous high-fashion fabrics in more than 18 shades. It is the appeal to the eye and hand, of color and texture, she emphasized, which determines a fiber's value from an aesthetic viewpoint.

To the plant, ease of processing in knitting and finishing, together with ease of dyeability, are the prerequisites to fiber acceptance.

Creslan Setup. The processing routine for a typical 100% Creslan double knit begins at the Fair-Tex plant with the arrival of the yarn. Yarn for Fair-Tex Style 9819 is 2 and 3 denier. After inspection for evenness, the yarn is tested for moisture content to insure smooth knitting.

During knitting on the Morat (an 18-cut circular Jacquard machine) a stitch meter rather than the human eye is relied on to check stitch uniformity. (This style calls for a 24/1 Creslan yarn and a construction of 40 stitches per inch.) Any variation in stitch, as every knitter knows, could change fabric texture and performance—a loose stitch, for example, would cause excessive shrinkage besides creating a "sleazy" appearance. Therefore, the stitch-setting check is made at regular intervals. The machine operates at 16 rpm, producing 30 lb of the Creslan fabric in 8 hours.

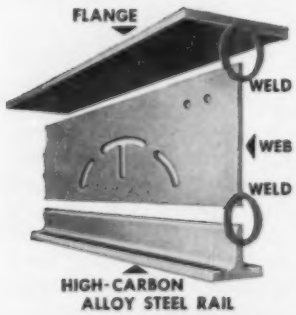
The dyehouse can process 125,000 lb of fabric in a normal week of operation. It has 9 becks, nearly all 16 ft wide, capable of handling all categories of fabrics and blends. And Fair-Tex recently began a package dyeing operation.

It is interesting to note that the plant knits all garment accessories and dyes them in the same bath with the corresponding fabric lot,

Continued on page 182

TARCA TRACK

Introducing a *Superior* OVERHEAD TRACK for *TEXTILE HANDLING*



Here's an entirely new track that will withstand heavy, swinging, and impact loads — provide a smooth trouble-free overhead road for materials movement — assure extra years of service over ordinary tracks.

Tarca Track was perfected by Cleveland Tramrail after extensive research and testing. It is different from all other overhead tracks.

Tarca Track parts are proportioned to provide a perfectly balanced design to suit all load requirements. They are combined into one rugged section by automatically controlled welding. All welds are continuous to assure maximum rigidity.

Erection is easier, faster because Tarca Tracks are straight and accurate. Need of shimming and other time-consuming work is eliminated. New support fittings speed erection and facilitate track alignment.

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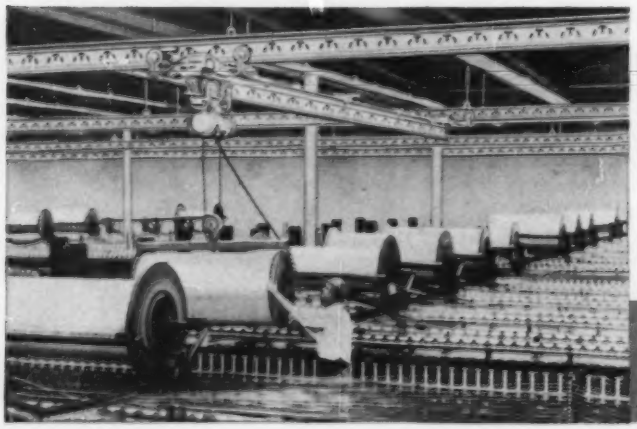
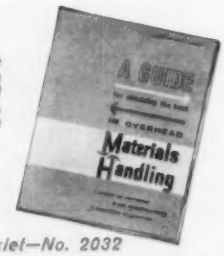


Many hundreds of textile mills have depended for decades upon Cleveland Tramrail for much of their materials handling. TARCA TRACK offers additional assurance for finest performance.



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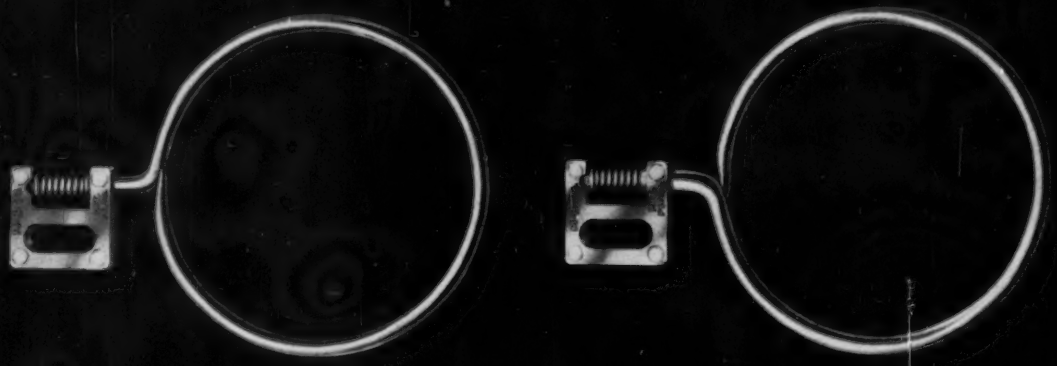

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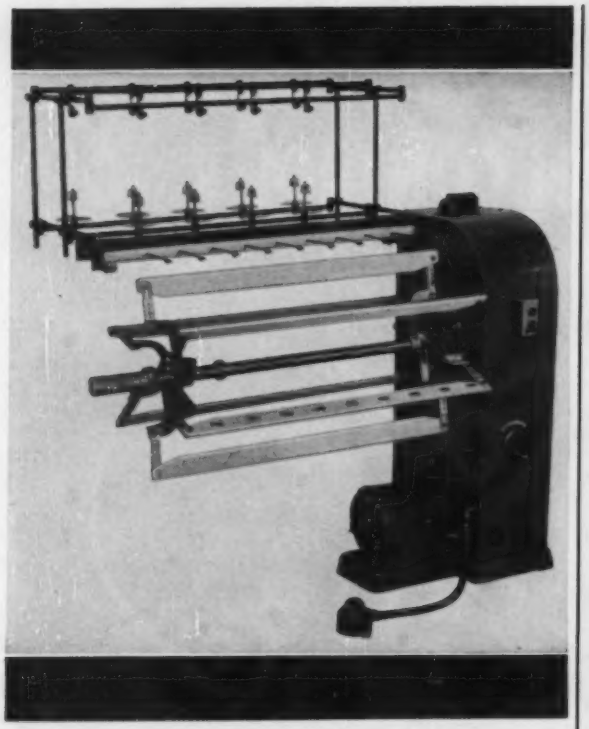

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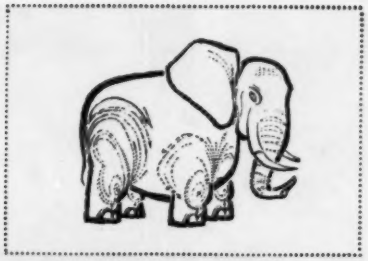

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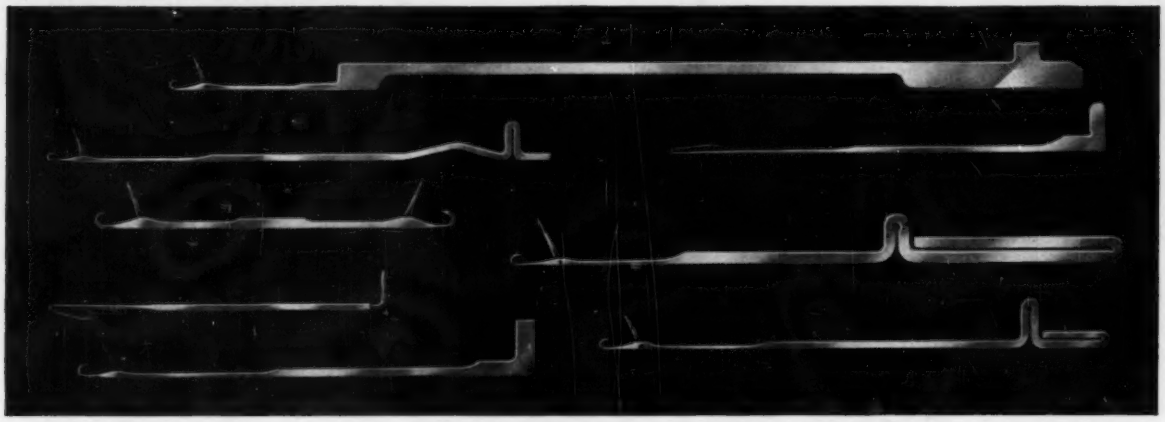

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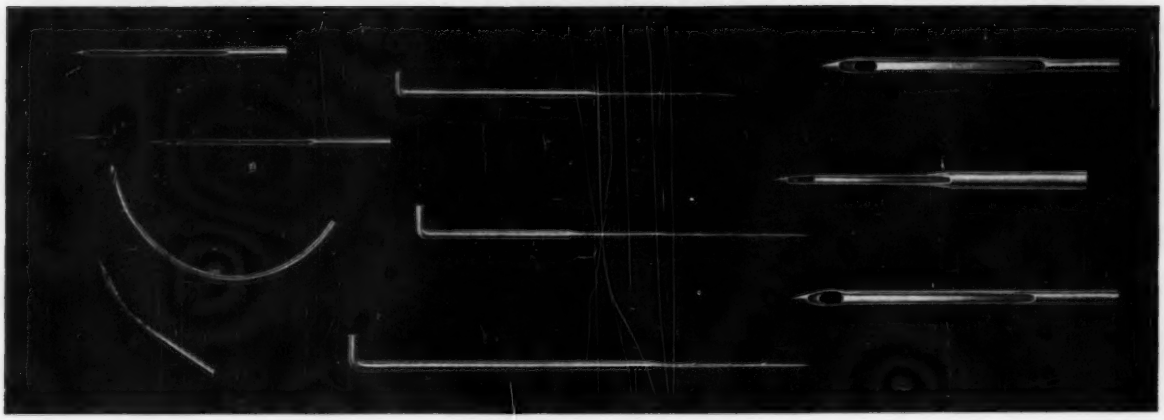

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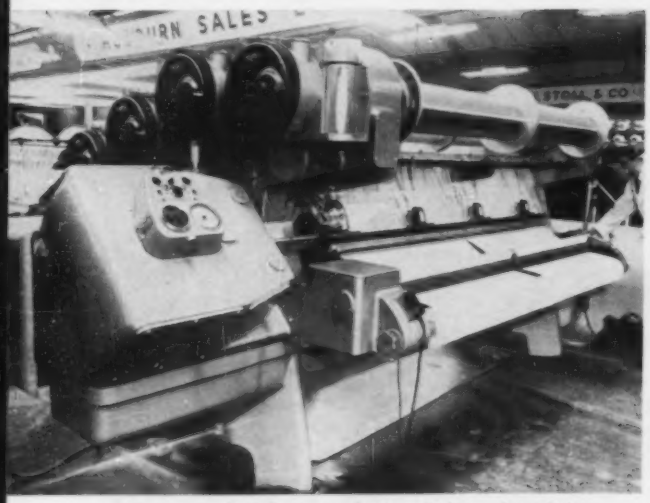

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Pneumatic power device for hand flat frame—Hosiery Equipment Ltd.

NEW AT MANCHESTER

by P. Abbenheim

THE BIGGEST show of knitting machinery ever assembled was that held at Belle Vue, Manchester, England, in late October. It was agreed by all that it was far superior to anything held in England previously, both as far as organization and attendance were concerned, and for sales.

Singer-Fidelity, for example, booked something like $4,000,000 worth of orders for their new four-feed circular stocking machine. This machine will knit plain, mesh, or stretch stockings as a continuous operation, and the firm says quite boldly that with it they can produce more than three times the output of a dual feed seamless stocking machine. Features of the machine include automatic tensioning, electronic control, and automatic stocking ejection—all done faster than anything previously available to hose makers.

This is not to imply that the matter is now resolved and that everyone believes the only way to make a circular stocking is on a four-feed machine. Far from it. One American at the show said that by swinging over to circular hose machines of this type there was a definite danger of "cooking the goose that lays the golden egg."

He continued to say, "I can visualize mills with capital equipment recently purchased never having a chance to run it. We are in the business from the long-term point of view, but are the four-feed machine builders in for a short-term advantage?"

This may very well be posing a false question, for if the trade does not have the machines it demands from its traditional suppliers it will buy where it can find them. This was proved by the sales of over $3,000,000 booked on Italian four-feed machines by *G. Billi* of Milan, who showed their new Zodiac machine; and by *Gottlieb Eppinger* of Esslingen in West Germany, who took a similar weight of orders for their four-feed stocking machines.

Robert Peel, vice-president—research for *Singer-Fidelity,* said "We have had some very encouraging interest in our four-feed machines. One of the problems has been to get manufacturers to accept the possibility of these four-feed stockings being equal in quality to conventionally made stockings."

That *Textile Machine Works* of Reading, Pa., have been quick to appreciate the situation was instanced by Leroy P. Garrigan, manager of the firm's International Division. He said that this show had established beyond any doubt that the four-feed machine would have to be included among the ranges of the leading manufacturers of seamless stocking knitting machines.

Full-Fashioned. TMW is actively considering the extension of full-fashioned machines into the knitted swimwear trade. This is an extremely interesting situation

brought about by such new fibers as Lycra and Vyrene. These are extremely costly and by knitting the garments to the required shape, as opposed to cut-and-sewn manufacture, the cloth and garment maker stand to effect substantial savings in raw material.

The full-fashioned equipment of the *Bentley Engineering Group's* subsidiary firm, *William Cotton Ltd.*, generated outstanding interest and they are believed to have contributed approximately half the group's orders, which totaled something in the region of $6,000,000. The big seller was their UO/AE frame for full-fashioned knitwear. It was shown constantly running on commercial products for an English company. The yarn run was Orlon.

This machine can run at speeds of 70 courses per minute at 28-in. knitting width, and this will be increased to 90 cpm on a width of 20 in. The fashioning speed has been accelerated to over 50 dips per minute. The automatic changeover from knitting on garment to making the next has been incorporated in the new frame in place of the old hand change. This reduces the changeover time to about 20 seconds.

Just about everything that can be has been automated on this frame, including draw-off, rib transfer, welt turning, conveyor system, and lubrication. Two additional carriers allow for three-color striping of any width and for any number from one course upwards.

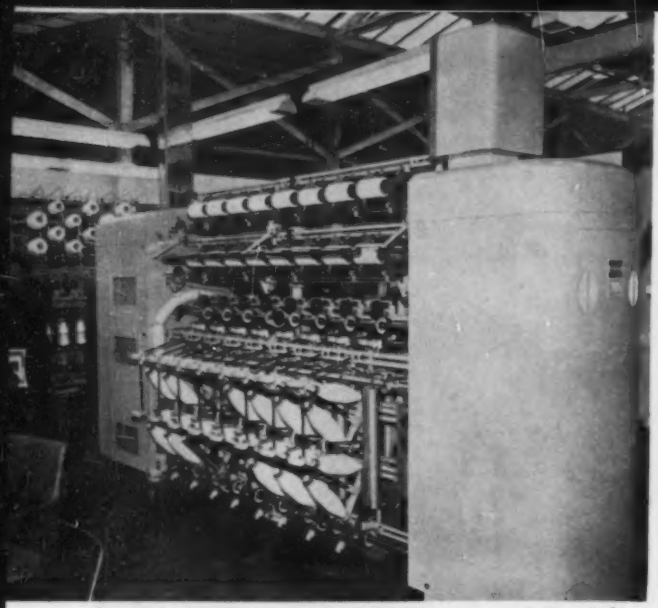
The machine is offered by *Cotton* in all necessary gauges, and an interesting feature of the frame is its centralized control equipment. Although normally built in up to 16 sections, the exhibition machine was only an 8-section frame.

Automation for Seamless. Reverting to stockings for a moment, mention should be made of the astonishing Down Stream system revealed by *Meccanica del Nord*, Italy, and sold throughout the world by *Coates Smith (Zurich) Ltd.* This incredible machine has brought the day of the automatic seamless hose mill a big step nearer reality.

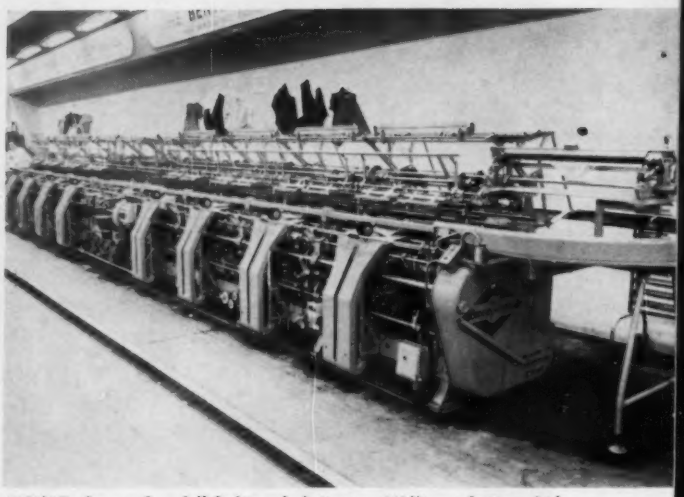
The system is connected to up to 60 twin feed or 90 single feed circular machines by a plastic tube conveyor system. As the stockings come off the machines they are blown to the Down Stream unit. Here each stocking is automatically checked for size, and inspected, and then delivered to a traversing tray that drops it into a bin corresponding to the size. In this way the entire production from the machines is checked and inspected before any subsequent processing.

At the show the firm was collaborating with *Lonati* to show how the unit works. That it impressed the trade buyers was proved by the fact that *Meccanica del Nord* have returned home with orders for its units from all the leading British circular hose people and also one of the largest American companies.

Hand Flat Machines. Although there is never likely to be huge



C.S. 9 textured yarn machine—Ernest Scragg & Sons Ltd.



UO/AE frame for full-fashioned knitwear—William Cotton Ltd.

business in the manufacture of fashioned garments on hand flat machines, as far as the top end of the trade is concerned there will be a good market ready to take these high-priced garments. It is because of this that hand flats will continue in use.

Hosiery Equipment Ltd., Leicester, England, showed a very novel development. This was an attachment of their own design applied to a Dubied hand flat frame. The device is pneumatic and it provides extra power for the hand operative on the machine, removing much of the effort and making production more consistent and rapid.

The development is still largely in the prototype stage, but the makers said they were swamped with orders or at least requests to accept options. Until the machine is perfected, however, they are holding back.

Winding. Hit of the show, at least as far as winding equipment was concerned, was the *Leesona* Uniconer, already well received in the States. German visitors particularly were reported extremely impressed by it.

The German equivalent of the Uniconer, the *Schlafhorst* Autoconer, was not shown at Belle Vue, simply because delivery dates are already extending into 1965. This is a measure of its acceptance in Europe.

Visitors to the new show further commented that the present new *Leesona* machine is obviously the second "pay-off" (Unifil was the first) in the extensive program of research inaugurated by the company some few years ago. Looks as though we shall be hearing more in the future.

Another yarn-handling machine builder is *Ernest Scragg & Sons Ltd.*, and they too are now emerging with a completely new range of machines which they style the "70s." This is a twofold concept representing seventy years in building equipment for throwing and doubling on the one hand, and on the other it is meant to imply that they are aware of what will be expected by the early 1970s and accordingly they are designing up towards these anticipated demands.

Scragg's big newsmaker was the C.S. 9 high-speed false-twister. This impressive new machine fairly bristles with new concepts, such as the Spinflote spinners that are both compact and very regular in the twist they insert into the yarn. Slippage is said to be completely overcome. The heaters now stand out as the crux of reliable yarn quality in texturing, and on the C.S. 9 Scraggs have built in a 24-in. heater which has transistorized individual temperature control with over-all adjustment.

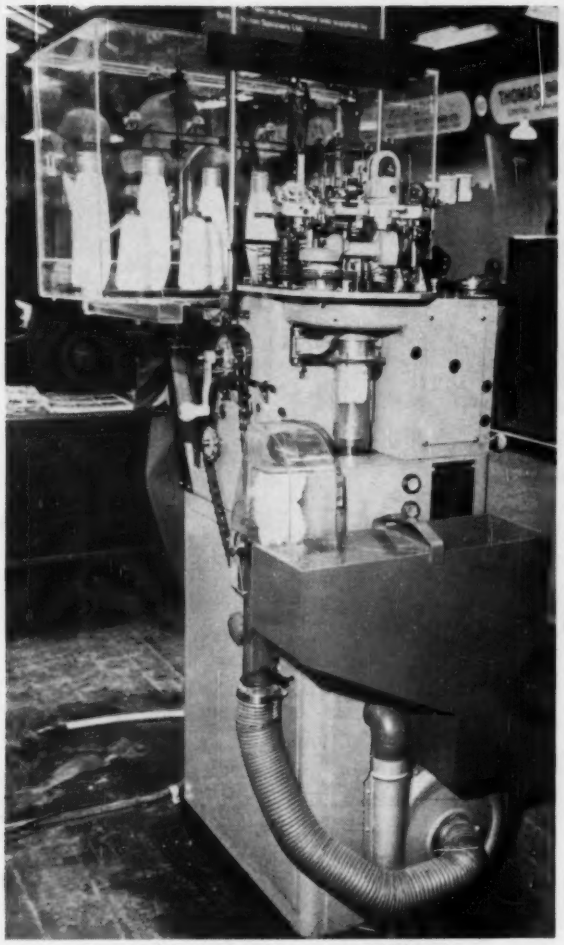
The package take-up capacity is 6 lb maximum, and the magazine creel will take packages up to 4 lb. Another innovation is the fume extraction running along the frame. This removes monomer fumes from immediately above the heater outlets.

Of course, the question of spindle speed inevitably crops up, and here *Scragg* at present is holding back on the release of specific information until they can publish recommendations based on extensive mill trials with various yarn types and deniers. It is common knowledge, however that the machine is capable of operating at a comfortable 300,000 rpm.

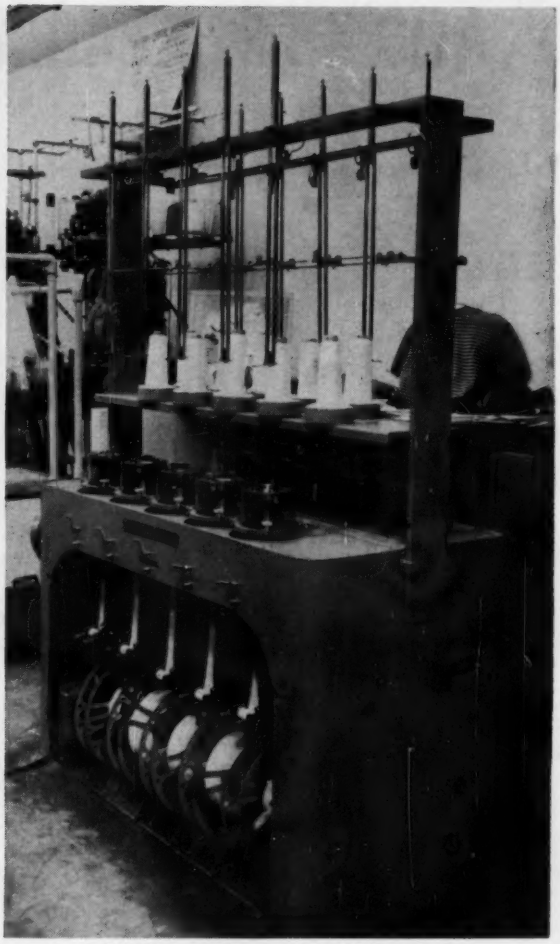
Novel concept in machine construction is the design of the end frames. They now reach to the floor and carry everything. The gearing has been made much more compact and accessible, while everything is enclosed in glass-fiber-reinforced resin covers and the access panels are pegged in position and retained by strong, but relatively small, permanent magnets.

Looking at the new range of 70s, which also include the S.M.D. 3 uptwister, S.M. 6 uptwister, D. L.W. ring doubler, and the D.L.C. ring doubler, the visitor is agreeably impressed by the modern, cleancut appearance of the frames. More machines are expected within coming months.

Crinkle Yarn. Still used in the hosiery trade is crinkle yarn, made



Four-feed hosiery machine—Singer-Fidelity, Inc.



Crinkle-yarn knitter—Scott & Williams, Inc.

by knitting up a tube of filament nylon, setting it, and then backwinding and unravelling it. *Scott & Williams* was the only firm at the show featuring such a machine.

This ten-head knitting machine produces a very useful yarn for the welts of stockings and, as far as could be learned, it is the only machine in the trade built specifically for this type of production. The only requirement in yarn setting for this type of material is that the temperature should be in excess of that of any subsequent post-treatment of the hose.

A big attraction of crinkle yarn production is that it is very simple and straight forward.

Warp Knitting. The warp knitting and Raschel trades are reaching an all-time high. During the exhibition it was revealed that *Liba Maschinenfabrik GmbH,* in West Germany, was buying up the German Raschel machine builder *Walter Kidde.* The reason for this was said to be that Liba would then be able to augment its range of machines from the present 2-, 3-, and 4-bar machines to complete a range incorporating muti-bar warp knitting machines such as those making power nets, elastic materials for the foundation wear trade, and lace-type trimmings.

The West German firm of *Karl Mayer* is to boost its production of warp knitting and Raschel machines from a present 8 per day to 10 per day by the end of the year. The reason for this is not hard to find when it is known that the order book is now for over 1,000 machines!

The British warp knitting machine builders, *Hobourn - F.N.F. Ltd.,* who have now started selling through the group company *Hobourn Sales Ltd.,* blossomed forth with some interesting new machines. These are called the Superline K.14 range and they truly are a superline. The standard widths range from 84 to 168 in., and although they are accommodating say four sets of beams, the center of gravity of the newly styled frames is kept relatively low.

Based on a 24-hour day, 7-day week, the knitting speed of these new machines is quoted for a knitting width of 168 in., with 2 bars, at 1,000 courses per minute, and on 4 and 6 bars, 900 to 1,000 cpm and 850 to 1,000 cpm, respectively. *Continued page 149*

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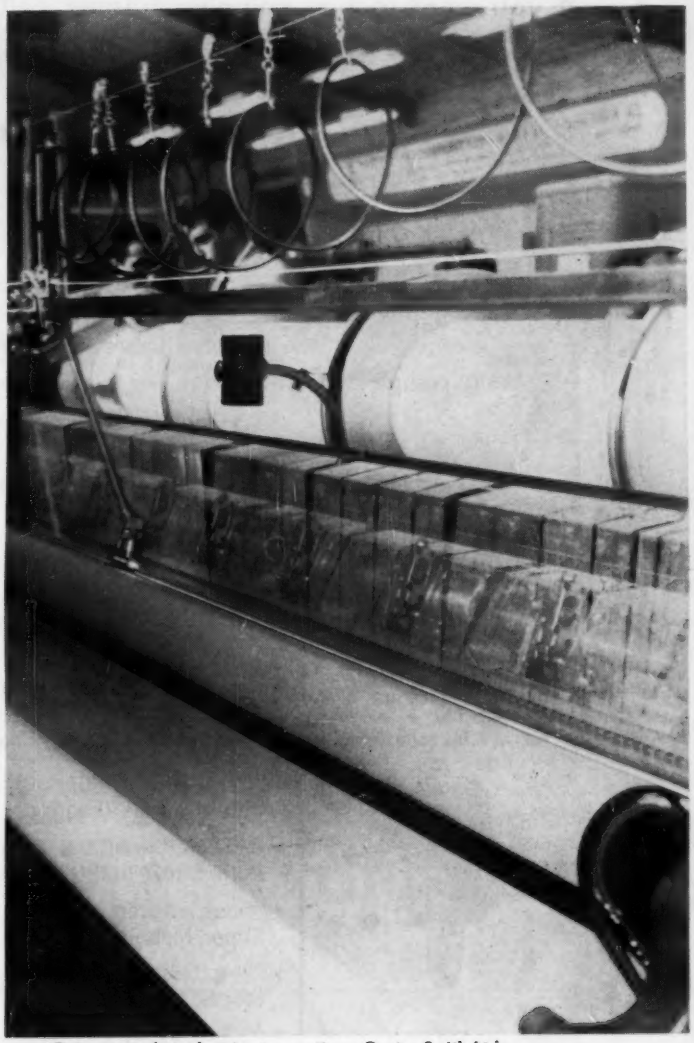
Bobbin stripper—M. Scaglia SpA.



Detexomat photoelectric stop motion—Coates Smith Ltd.

The impressive vibrationless construction is retained in the new frames, and although this may not be 100%, it is certainly sufficient to allow a hexagonal coin (Perhaps needless to say, an English coin.—The Editors) to be balanced over the transmission box without it falling over.

Tied in with the warp knitting is the new Detexomat made by *A.C. D. (Sales) Ltd.*, and sold through *Coates Smith Ltd.* This is the first photoelectric warp scanner to be built in commercial production outside the U.S.A. It is very compact and the head, which carries the photocell and light source, is mounted on a traversing telescopic inspection arm. This runs on a bar across the knitting width of the warp knitter. Should an end break, the amount of light reflected from the cloth diminishes and this is amplified by the control unit which then stops the frame before the fault can be magnified.

Early in the run of the show, *Coates Smith* said they had sold upwards of 50 such units and there was an excellent prospect of many more being marketed.

A radically improved ribbon loom was launched by *Jacob Muller* of Frick, Switzerland. The new machine is the CSQ 329. Improvements in it include a more rigid frame than earlier comparable machines, a new eccentric intermediate drive, dynamically improved cam drive to the shuttles, a new type of shaft drive with direct shaft motion, quick acting brakes with practically instantaneous stopping, and electronic warp and filling stop motions.

Bobbin Stripping. Getting yarn onto a bobbin is one thing—getting off the waste is another. This problem has been accentuated in recent years by the improvements in package design. The bobbins themselves are expensive and damage to them is not merely expensive because replacement is costly, but because it can cause yarn quality losses.

Over the years various ap-

Continued on page 182

If you want to buy spinning frames, call Whitin, Saco-Lowell, or Roberts

If you want to buy spinning changeovers . . .

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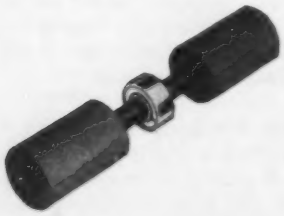
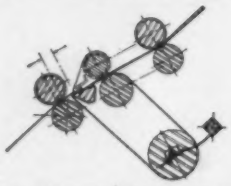
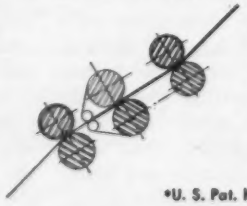


SPINNING DRAFTING CHANGEOVERS
for both long and short bottom apron systems



- "Cavalla-Roth" Super Changeover, anti-friction from the roller beam up
- Cavalla-Roth" P.C.O. for existing double-apron Roth, Shaw, and Gwaltney frames
- "Double Apron Roth" in Standard, Custom, and Super Models
- "2-Apron Shaw" in Standard and Custom Models
- "2-Apron ZDR" in Standard and Custom Models
- "Z" in Standard Model
- Complete Casablancas Changeovers in Standard, Custom, and Super Models
- Programmed Changeovers in Multiple Stages to Spread Investment Costs



NOTE
Standard* Changeovers eliminate front cap bar.
Custom* Changeovers eliminate front and middle cap bars.
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Dixon

ENGINEERED SPINNING CHANGEOVERS SINCE 1876

For further information use Handy Return Card, Page 175

HOW OTHERS MANAGE

Tips on carding nylon with metallic clothing

THE EDITORS:

It is possible to card 1½", 1.5-denier nylon on cards clothed with metallic wire, providing the wire is of the correct type and angle, when settings are changed to accommodate. Usually a wide setting between flats and cylinder is all that is required.

However, it is not unusual to card 1.5-d nylon staple on fillet-clothed cards without the aid of a fancy roller. When attempting to work 1.5-d nylon staple at normal cotton speeds without the aid of a fancy roller, the fiber loads the cylinder wire and the doffer is unable to take off the fiber and form a web.

If certain speed alterations are made, which vary with the counts of fillet clothing (and type of wire), it is possible to card 1½" x 1.5-d nylon staple without the aid of a fancy roller quite successfully. And only a 3-4 hour stripping cycle is required. To do this work, one must find out the temperature and relative humidity that best suits the working of the particular make of nylon, i.e., in respect to its spin finish and torsional and flexual rigidity properties. When this is settled, changes at the card can be made.

The changes required are made with a view to placing the fibers on top of the wire, and this is brought about mainly by changing the speed ratios between licker-in and cylinder and doffer and cylinder. The type and counts of wire govern to some extent how far the usual ratios may be changed. For instance, it is possible to run a negative-rake licker-in wire faster than a positive-rake licker-in wire.

In normal cotton carding it is

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Every kink, short-cut, time-saver, or quality improvement suggestion entered in the contest will be paid for at current space rates immediately upon acceptance, and the $100 award will be made to the winner as soon as all entries are judged.

The contest rules are simple:

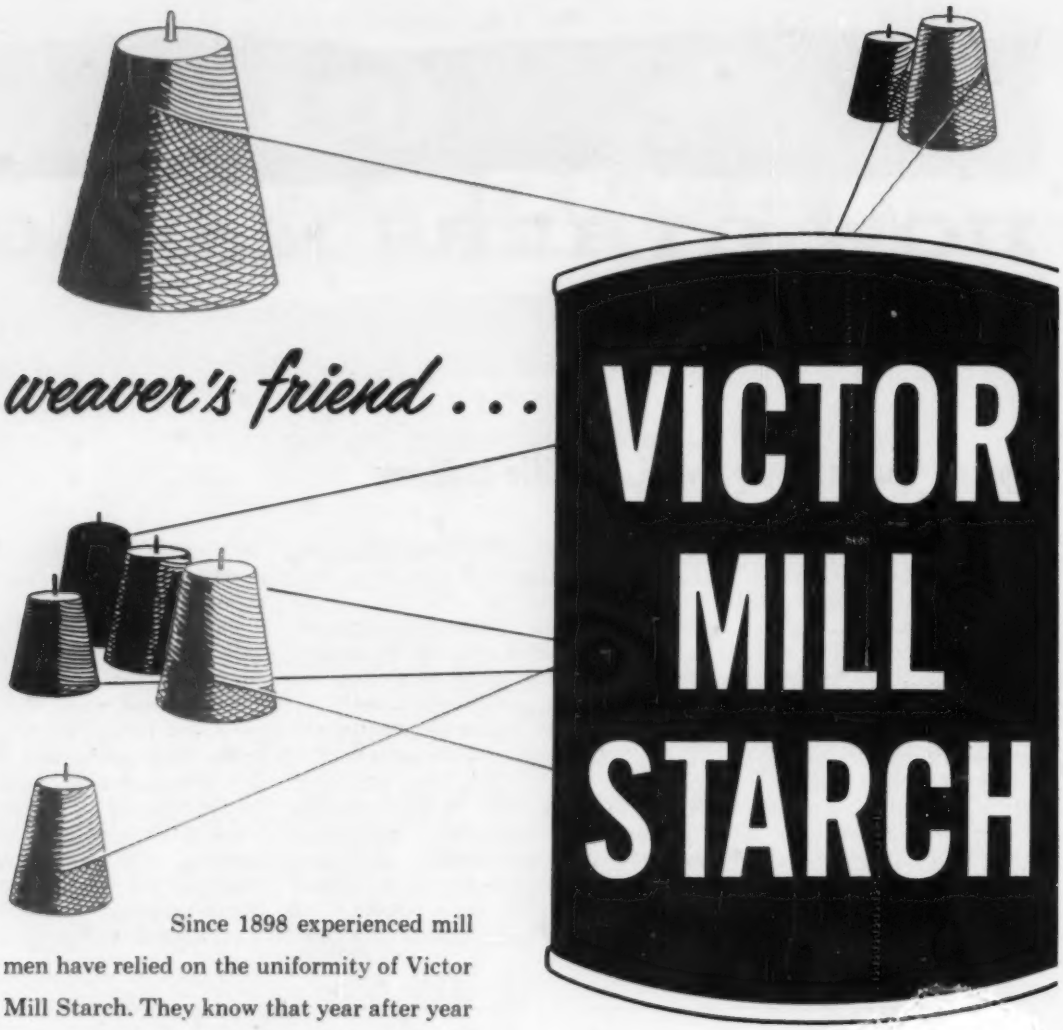
► All contributions must be postmarked not later than midnight, December 15, 1961.

► No limit to the number of entries an individual may submit in any one contest.

► All entries paid for upon acceptance — no waiting. Extra payment for photographs that are usable. Extra consideration is also given kinks accompanied by legible pencil sketches or drawings.

► Entries must not have been published previously and must not be submitted to any other publication.

► Send your contest entry to: The Editors, TEXTILE INDUSTRIES, 1760 Peachtree Rd., NW, Atlanta 9, Georgia.



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usual to run the main cylinder at 160 to 180 rpm with average surface speeds of licker-in and doffer resulting in ratios as follows: licker-in to cylinder, 2.5 to 1; doffer to cylinder, 40 to 1.

When changing to work 1½" x 1.5-d nylon staple these ratios are changed to something lower between licker-in and cylinder and higher between doffer and cylinder. It must be pointed out that the card web does not have the same appearance after the changes. It is more "wool-like" in appearance than the "cotton-like" look, when normal speeds are used along with the aid of a fancy roller. But even though the card web is perhaps not "cotton-like," the resultant yarns are cleaner and up to eight per cent stronger when the changed speeds are used and the fancy roller dispensed with, probably because the fiber is less fatigued during carding.

The following examples have worked well in producing clean yarns and using only normal cotton stripping time cycles at the card:

Example 1

Card clothing
- 110's cylinder and flats fillet wire
- 120's doffer fillet wire
- Positive-rake, cotton-type licker-in wire

Speeds
- Cylinder—120 rpm
- Doffer—5.5 rpm
- Licker-in—400 rpm
- Flats—3¾" per minute

Ratio of surface speeds
- Licker-in to cylinder—1.675 to 1
- Doffer to cylinder—62.5 to 1

Example 2

Card clothing
- 100's cylinder and flat fillet wire
- 110's doffer fillet wire
- Negative-rake, rayon-type licker-in wire

Speeds
- Cylinder—130 rpm
- Doffer—6.75 rpm
- Licker-in—500 rpm
- Flats—2⅛" per minute

Ratio of surface speeds
- Licker-in to cylinder—1.45 to 1
- Doffer to cylinder—57 to 1

Settings (in thousandths of an inch) common to both examples:
- Doffer to cylinder—4
- Licker-in to cylinder—5
- Screen to cylinder
  - Front—170
  - Middle—70
  - Back—30
- Back plate to cylinder
  - Top—15
  - Bottom—20
- Front plate
  - Top—30
  - Bottom—24
- Screen to licker-in
  - Front—10
  - Back—200
- Mote knives to licker-in
  - Top—15
  - Bottom—12
- Feed plate to licker-in—12

It is possible to use these close settings of doffer and licker-in to cylinder at the lower-than-normal cylinder speeds, providing the card members are in "truth" (properly aligned and fixed). The conditions are given as a guide to anyone wanting to do this work, but slight departures may have to be made to suit the type of fiber, wire angles, and number of points per square inch.

CONTRIBUTOR No. 1349
(England)

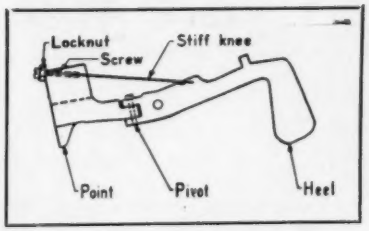
Lever extension adjustment aids knitting

THE EDITORS:

Continuous production of highest quality goods is assured from operating lever extensions on Banner Solid Color Overplaid knitting machines by installing a simple screw adjustment through the top of the lever extension. Wear at the pivot point and at the point of cam contact will cause the lever to operate slower than is desired, due to the lost motion and slack in the unit.

A very good method to eliminate the slack in the pivot point is to install a stiff knee of steel rod between the auxiliary yarn change lever, operating lever, and the lever extension (TEXTILE INDUSTRIES, September 1957, page 203).

Wear still will occur at the cam contact point on the lever extension and will continue to do so as long as the unit is in use. With this continual wear comes wider and wider laps until finally the quality being produced is substandard, even if the slack has been taken out of the pivot point.



To compensate for this wear, install the stiff knee as described in the aforementioned article, with this change in design. Drill the No. 32 hole in the extension through the entire part and thread with a 6-36 tap. Screw into this hole a hardened No. 6-36 screw with a lock nut onto it.

This screw will now butt against the end of the steel rod stiff knee and as wear occurs at the contact point it may be offset by running in on the screw, thereby assuring a constant setting and maintaining vertical rigidity of the unit.

CONTRIBUTOR No. 1348

Supervisors, too, should suggest

THE EDITORS:

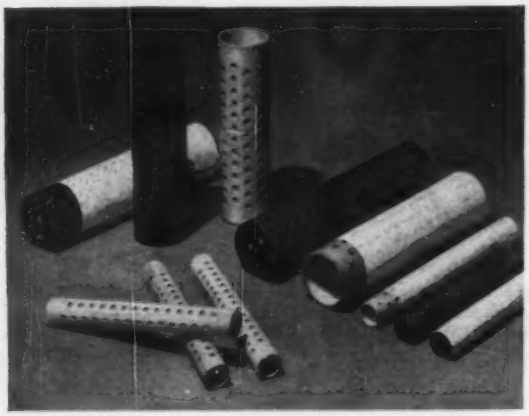
Every supervisor can and should make suggestions. Each one he turns in will raise his value to his company.

Practically every firm of any size has some sort of a suggestion system. For those supervisors who are somewhat in doubt about turning in suggestions, forward every one, including the doubtful ones.

The writer, who has had many of his suggestions adopted, and

Sonoco Dytex® Tubes for package dyeing and bleaching... *are you missing a good thing?*

Economical Sonoco Dytex Tubes are made to save you money. When used with Plastavon Sleeves, they provide the perfect one-time combination for package dyeing and bleaching. They have proven their value throughout the years.



Plastavon Sleeves can be purchased separately or attached to the tubes. Pre-cut filter paper sheets and sleeves are also available in various sizes.

The Plastavon Sleeve permits even dye distribution, better "flow" control, and filters out objectionable or discoloring matter. The sleeve also aids in the drying process.

Sonoco Dytex Tubes are available in three grades — "C," "B" and "L" which designate the type and degree of impregnation. The Dytex "L" was designed for those who prefer a light, natural-colored tube. Standard sizes are $\frac{5}{8}$" and $1\frac{5}{8}$" I.D., 6" to $6\frac{15}{16}$" long. Special sizes made to customer order. Surfaces can be smooth or embossed.

For visible identification, solid colored tubes may be used. Tubes with colored end rings may also be ordered in black, red, orange, green, blue, yellow or brown.

Continuous product development is an advantage when you buy from Sonoco. *Only Sonoco,* in its field, provides the research and integrated manufacturing facilities required to better serve the textile industry. *You can profit from Sonoco's more than 60 years' experience!*

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SONOCO PRODUCTS COMPANY, HARTSVILLE, SOUTH CAROLINA • Mystic, Conn. • Akron, Ind. • Ravenna, Ohio • Lowell, Mass. • Holyoke, Mass. • Phillipsburg, N. J. Longview, Texas • Philadelphia, Pa. • La Puente, Calif. • Fremont, Calif. • Atlanta, Ga. • Richmond, Va. • **MEXICO:** Mexico, D. F. • **CANADA:** Brantford, Ont. • Granby, Quebec

For further information use Handy Return Card, Page 175

many turned down, has for many years followed a system he feels may benefit every ambitious supervisor—young or old.

Keep a pencil and pad at the bedside, and if an idea pops into mind while awake at night, immediately jot it down. Many an idea, not so noted, will usually vanish by morning.

Following are some suggestions that supervisors have thought up, and which have been accepted and put into practice with good results:

One mill with two spinning rooms had trouble about spinning doffing boxes. Each department head declared his shortage of boxes was due to some other room commandeering more than its share of boxes.

Finally, a supervisor in one of the rooms suggested painting the boxes a different color for each room. The squabbling over boxes then ceased.

Bottom rolls on twisters give out at times. This causes shutdowns and consequent loss of production. One supervisor suggested keeping a spare full length bottom roll in the stock room for emergencies. This suggestion was adopted and put into immediate use.

In one mill where wet twisting of cotton yarns was carried on, water for the troughs had to be carted from a sink in the center of the room. Boys did the work. One day when there was a shortage of boys, the foreman conceived the idea of extending the main water pipe along the room with faucets at convenient places.

This suggestion worked so well that the trough filling procedure could be carried on with one less worker.

It should be emphasized most emphatically that a suggestion system, however elaborate, cannot be truly successful unless it is fully backed by the top management. Remember, it's the little thing that trips you. You can see the big ones easily.

CONTRIBUTOR No. 1345

Wavy selvages

THE EDITORS:

We have trouble with our poplin selvages being too wavy for the garment cutter. The condition is worse on the battery side. And we have the difficulty only on our plain-weave styles.

We have tried everything we know to do. Our constructions are 136 x 60 and 128 x 60, combed yarns; we have used 20s, 38s/2, 60s/2, and 38s in the selvages; and we have reeded both four and six per dent.

CONTRIBUTOR No. 1352
(Mexico)

(Will someone help this reader? —The Editors)

Saves slips, falls

THE EDITORS:

In plants with dry floors, worn sandpaper from floor sanding machines makes a good nonskid surface—stairs, ramps, platforms, etc. If the paper is not kept dry, however, the glue holding the grit

to the backing softens and lets the grit be tracked away. Attach it with any water repellent cement.

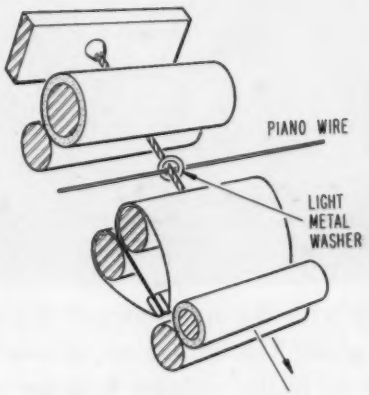
CONTRIBUTOR NO. 1328

Improvised thread guide saves lap-ups

THE EDITORS:

In a Japanese ring frame with double apron drafting there is no "thread" guide between the back roller and middle roller. That is all right as long as single roving is employed. But once we switched to double roving and found the lack of trumpet in that area allowed the two roving ends to separate. There was the usual eyelet on the traverse rod, but this did not keep the roving together as it passed through the zones. During the rainy season, this lack of control often allowed one end to separate, break, and lap.

We eliminated the trouble with a piece of piano (music) wire tied tightly between the back rollers and the middle aprons. One light ¼" metal washer per spindle placed on the wire, serves as a trumpet for the two roving ends, slides on the wire and allows the roving to traverse as dictated by the traverse rod. This simple innovation can be adopted wherever a similar situation occurs in any other drafting system.

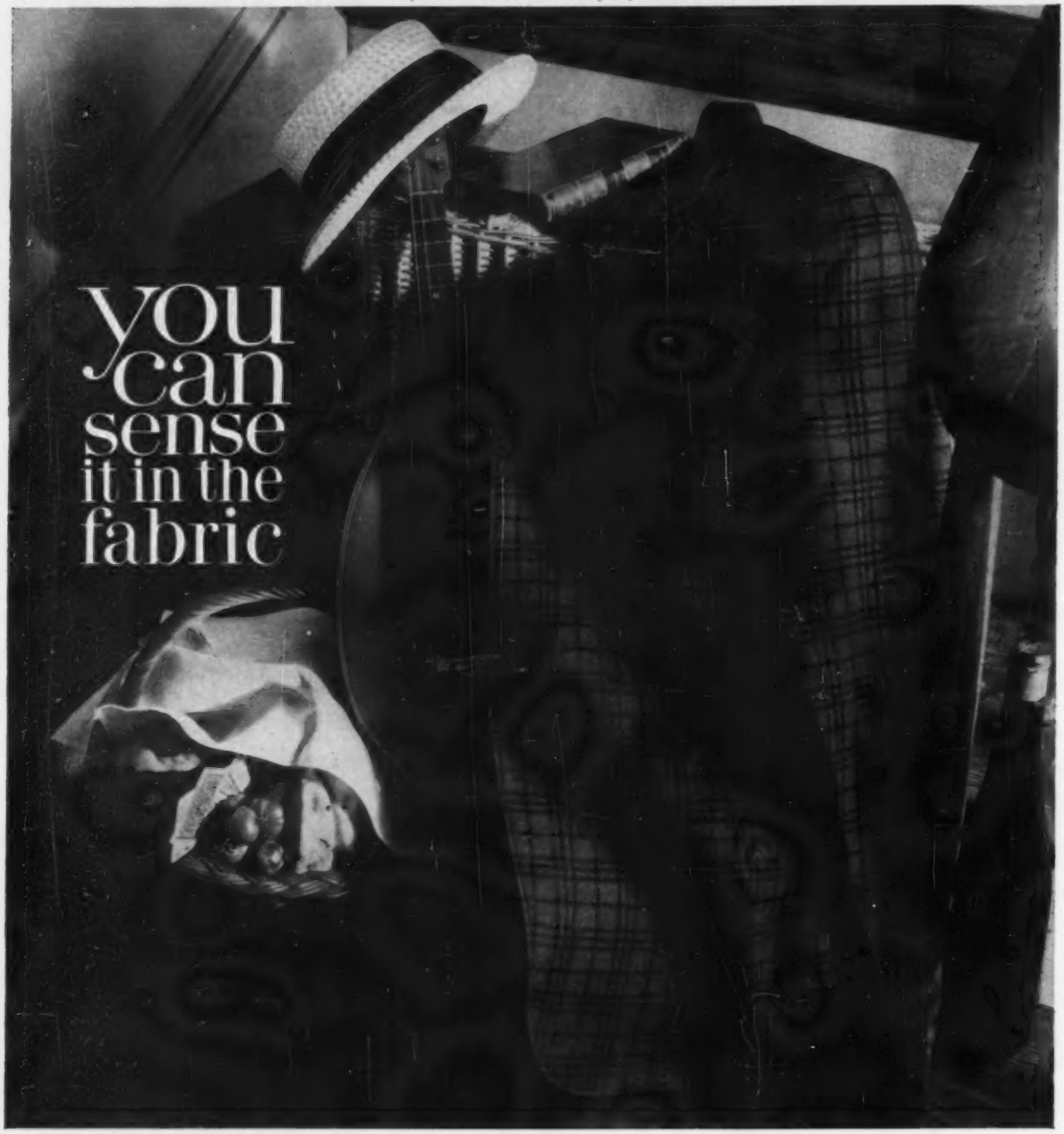


CONTRIBUTOR No. 1334

For a 1961 Index of TI

Write to The Editors, "Textile Industries," 1760 Peachtree Rd., N.W., Atlanta 9, Ga.

AS APPEARING IN: New York Times, The New Yorker, Sports Illustrated, Life



The Vitality of Creslan...the fiber with the six senses of fashion.
Vitality is one of the six senses of fashion. It is animation, verve, endurance...an unquenchable spirit. It can stand up to life, because it is the very breath of life itself. Now, Creslan acrylic fiber is breathing this lasting liveliness into everything from clothes to floor coverings. Creslan sparks fabrics with new color vibrancy, helps wrinkles disappear, keeps fashions fresh and neat with least care. Look for them. You'll enjoy all six senses: vitality, lightness, color, taste, touch, and beauty. American Cyanamid Co., N. Y.

Offices: 111 West 40th St., N. Y.; 3333 Wilkinson Blvd., Charlotte, N. C.; 2300 South Eastern Ave., Los Angeles, Cal.; 40 Fountain St., Providence, R. I.

CYANAMID
Creslan®
LUXURY ACRYLIC FIBER

For further information use Handy Return Card, Page 175

Gauge for setting battery thread guide angles

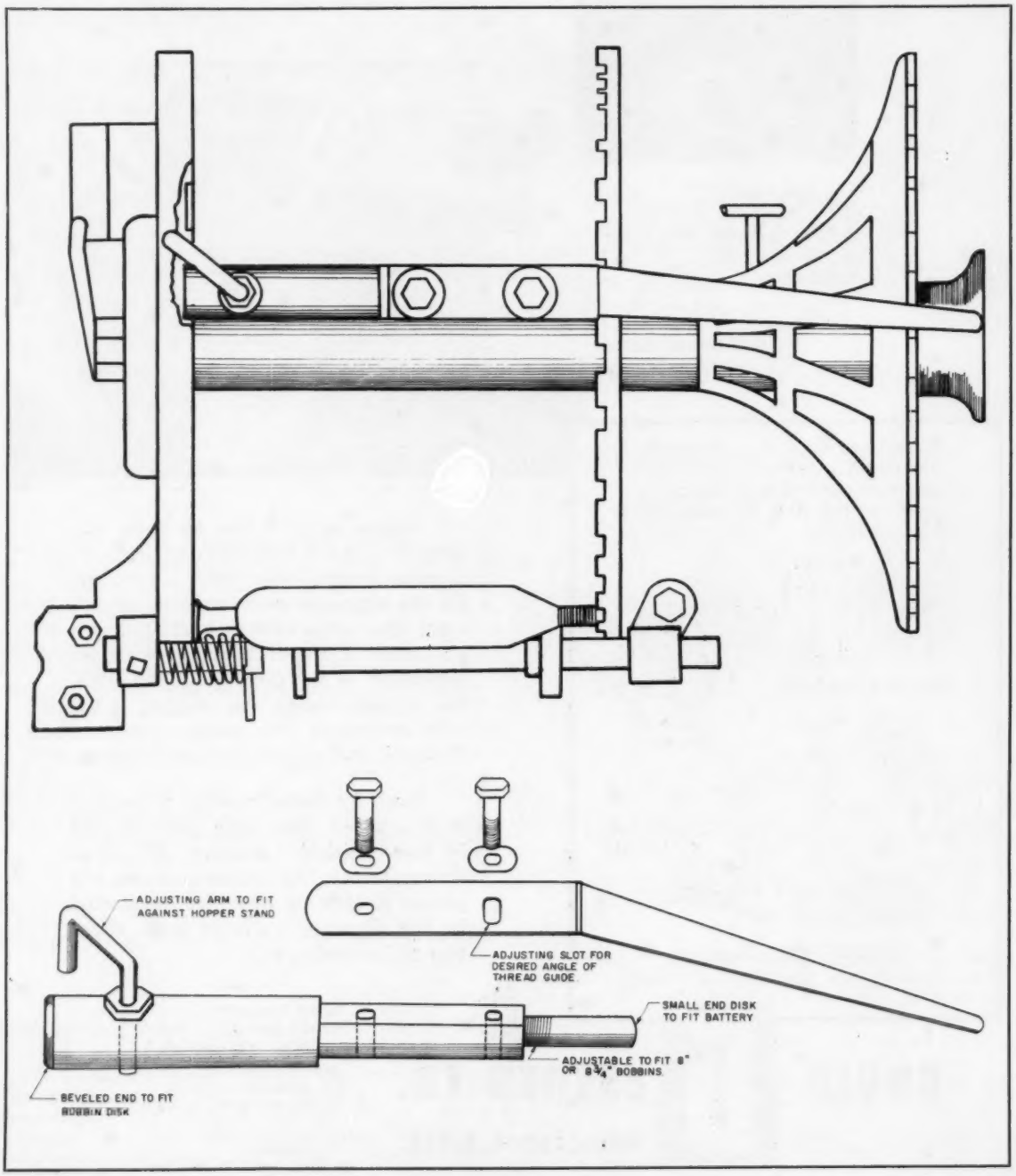
THE EDITORS:

We use this gauge to align our battery thread guides with our small end disks. The gauge may be adjusted to either 8" or 8¾" quills.

Also we paint light-color spots (we use orange) at two or three places between the quill tips on the small end disk and corresponding spots on the thread guide. These help our battery hands keep the ends running in the correct slots.

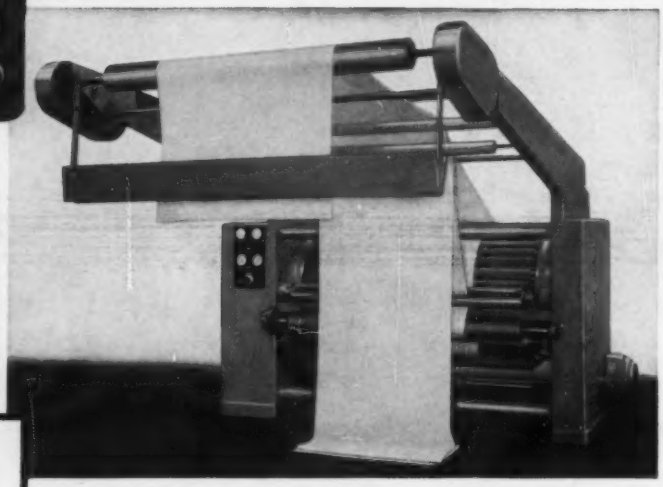
As the illustration suggests, we made the angle adjustable.

CONTRIBUTOR No. 1350


ADJUSTING ARM TO FIT AGAINST HOPPER STAND
ADJUSTING SLOT FOR DESIRED ANGLE OF THREAD GUIDE
SMALL END DISK TO FIT BATTERY
ADJUSTABLE TO FIT 8" OR 8¾" BOBBINS
BEVELED END TO FIT BOBBIN DISK

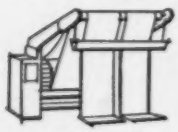
Pressure Controlled Napping

The entire story of the complete napping operation is registered on this single panel.

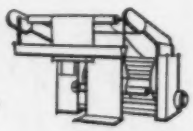


24 Roll Double Acting Hi-Torc Napper

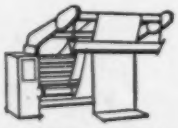
There are only five places in the world where you'll find this pressure control, and that is on each of the five Gessner Hi-Torc Nappers.



30 Roll Double Acting Hi-Torc

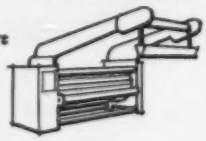


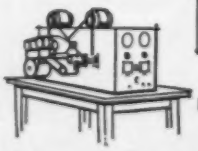
24 Roll Double Acting Hi-Torc



24 Roll Single Acting Hi-Torc

24 Roll Knit Goods Hi-Torc





Laboratory Hi-Torc

Something new? Yes, for those who have yet to avail themselves of Gessner's napping control with positive pressure. By the simple means of pressure, a constant that stays that way at all times, the entire cycle of napping is rigidly controlled — the progress of the cloth, the napping energy, the rotation of the rolls, everything. The operator alone can change it and right at the control panel.

Once the desired amount of pressure is determined, that same pressure may be re-established — anytime. Fabrics to be napped at 100 pounds pressure will always receive the same nap, unaffected by belt slippage, or change in the diameter of the worker rolls.

DAVID GESSNER CO.

WORCESTER, MASS.

Southern Representative:
Richard A. Herard,
222 Piedmont Bldg., Greensboro, N. C.

Western Representative:
E. G. Paules & Co.,
1762 West Vernon Ave., Los Angeles, California

Canadian Representative:
W. J. Westaway,
Montreal, Quebec; Hamilton, Ontario

For further information use Handy Return Card, Page 175

NEW PRODUCT PARADE

Traveling cleaner uses clean air

FilterBlo frame and room cleaner (left) operating in tandem with TravelVac floor sweeper (right).

A traveling cleaner which delivers only clean air is available and recommended for installation over spinning, twisting, roving, winding, and other machines. Known as the FilterBlo traveling cleaner, it provides a decided reduction in the number of ends down and improvement in yarn quality when used over spinning frames processing both carded and combed yarns. Also, there is a marked reduction in yarn breakage in winding.

Additional benefits resulting from FilterBlo in the spinning room include: less lint accumulation in the drafting system; less waste on revolving top clearers; less lint on and within the traveling blowers themselves; less required maintenance; maximum blower efficiency maintained; room atmosphere noticeably cleaner.

This new traveling cleaner contains a large revolving filter through which all air entering the unit passes. This filter is cleaned continuously by a vacuum nozzle connected to the coupled TravelVac floor cleaner.

Parks-Cramer Co., Fitchburg, Mass.

Do you want more data? Write ◂ or use card on page 175; list N-101

Two improved nylon yarns for carpets

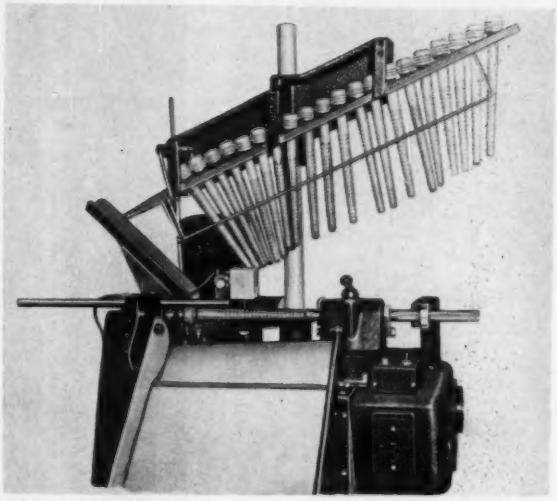
A new type of Cumuloft carpet nylon yarn (continuous filament) has greatly improved hand and appearance and gives improved tufting performance.

Another new nylon has greatly improved dyeing characteristics for deeper dye effects. With this yarn, carpets can be made with tone-on-tone combinations, color and white patterns, three color patterns, and other combinations to provide improved styling. This nylon is able to absorb more dye from the dye bath, with the result that a richer, deeper, and more lasting color is produced. Acid dyes may be used to provide broader color selection and more uniform dyeing. A fugitive tint for easy identification of these yarns in the mill is also available. (Another development to greatly expand styling potentials of all carpets made of Cumuloft nylon yarn is described on page 124.—The Editors)

The Chemstrand Corp., 350 Fifth Ave., New York 1, N. Y.

Do you want more data? Write ◂ or use card on page 175; list N-102

Tells when quills are "too crooked"



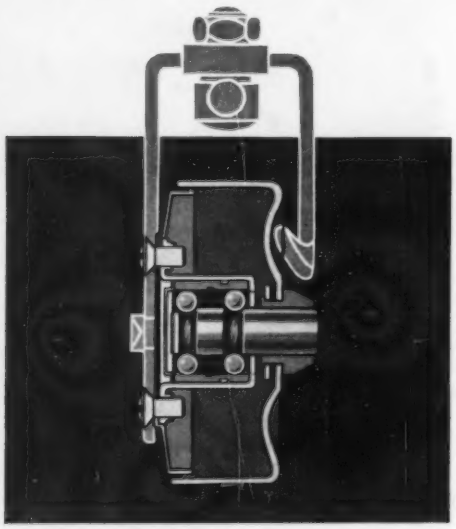
The Stehedco Electronic Bobbin Tester semi-automatically measures the degree of runout of loom bobbins at the rate of 37 a minute and rejects those with runout in excess of the preset level. Use of the relatively small machine (28" x 28" x 29"), which operates on 110-volt a-c current, makes it possible to prevent problems in filling spinning and winding caused by quills with an objectionable degree of crookedness. Misalignment in the

Claims made in all of these announcements of new developments are of necessity based upon information furnished by the respective suppliers.—The Editors.

Center-Spindle SB

Süssen
Kugellagerwerk

Suessen-WST Center-Spindles combine two significant advantages — an outstanding damping capacity and excellent centering properties. They do not tend to vibrate when passing the critical zone of resonance (1000 to 3000 rpm) and run in the exact middle of the ring at working speeds. In addition, as the actual "working space" available for the oil is very large, the oil does not have to be changed for long periods at a time. All the parts are of extremely robust construction, which makes the Suessen-WST Center-Spindle a very durable component. Thanks to its increased damping capacity, the SX spindle can stand up to very high working speeds.



The Suessen-WST tensioning pulley shown here is a remarkable construction, serving to guide the tape of the spindle drive on ring spinning and ring doubling frames. Its particular advantages are: robust design, low power consumption, thanks to the precision ball bearings, and simplified lubrication, which is necessary only after long intervals, and is effected by means of a grease nipple.

Center-Spindle SX

SPINDELFABRIK SUESSEN
SCHURR, STAHLECKER & GRILL GmbH
SUESSEN/WUERTT./GERMANY

shuttle is also avoided when quills are checked regularly in the machine.

Steel Heddle Mfg. Co., Box 6833, Philadelphia, Pa.

Do you want more data? Write ◂ or use card on page 175; list N-103

Reversible balloon control ring

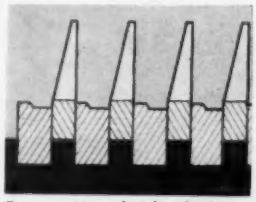
A new reversible balloon control ring is a time-saver in twisting and spinning operations. With just a quick flip of the ring the operator can reverse its twist direction without time-consuming realignment—the base position of the ring remains unchanged.

The spring-tensioned holder or fixed unit is of plain, durable construction, assuring long, trouble-free operation. This is made of die-cast aluminum alloy, while all other parts are stainless steel. The ring itself has a smooth, bright finish.

Mitchell-Bissell Co., 825 Brunswick Ave., Trenton, N. J.

Do you want more data? Write ◂ or use card on page 175; list N-104

More efficient way to clothe garnett cylinders



Cross-section sketch of Hunter "Sur-Lok" wiring system.

A recently announced clothing and reclothing wiring system for garnett cylinders of any make combines the best features of surface-wound and groove-wound reclothing. Known as the Hunter "Sur-Lok" Wiring System, it includes these unique features: (1) the maintenance of cylinder diameters during reclothing, and (2) a caulking process which "locks-in" garnett wire and prevents uncoiling.

Garnett cylinders clothed by this system last longer, and they can take more reclothings. No poppet adjustments after reclothing are necessary, and cylinder speeds do not change. The wire, which is available in sizes 6 through 18, is evenly laid. Wound on top of a clean cylinder, it lies flat. Points of the wire, which is as strong or stronger than that previously used, are uniformly sharp.

James Hunter Machine Co., North Adams, Mass.

Do you want more data? Write ◂ or use card on page 175; list N-105

Cloth cutter's motor runs on overhead trolley

A round-knife cutting machine with a suspended motor and flexible shaft is now commercially available. Since the motor runs overhead with ease in the direction of travel of the operator, and the cutting device is driven by a flexible shaft, the unit requires only about one pound of pressure on the part of the operator, eliminating the fatigue factor that is prevalent in the use of conventional round knife cutting machines. It is, therefore, particularly adapted for the use of female cutters. Also, the light weight of the cutting head permits precision and delicate cutting to be done.

Pransky-Industrial Sewing Machine Co., 74 Harrison Ave., Boston 11, Mass.

Do you want more data? Write ◂ or use card on page 175; list N-106

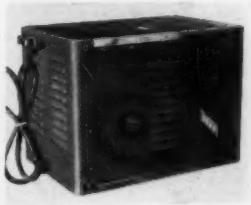
Warp beam truck for narrow alleys

One man can easily handle heavy warps and place them in looms with a warp beam truck recently introduced. It will lift warps weighing as much as 1000 lb to a height of either 30" or 44" as required (to clear loom whip rolls when movement in close places is necessary), and then it will gently lower the beam into place in the loom. Mechanical or hydraulic lifting and lowering devices are available.

Tatem Sales Co., East Hartford, Conn.

Do you want more data? Write ◂ or use card on page 175; list N-107

Air dryer protects pneumatic process controls

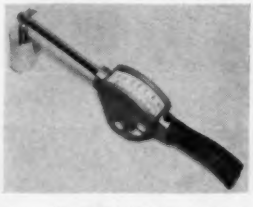


The clean, dry compressed air required for proper functioning of pneumatic process controls, etc., is assured when Zeks refrigerated compressed air dryers are used. The compact units receive air directly from the air compressor tank, cool it to a temperature slightly above freezing, and then remove the condensed moisture through an automatic discharge trap. An exclusive feature is the thermal-mass type heat exchanger which provides high efficiency, short compressor running time, and long service.

Zeks Industries, Inc., Edgemont, Pa.

Do you want more data? Write ◂ or use card on page 175; list N-108

Portable unit measures temperature of textiles



The "Kustotherm" is a surface radiation pyrometer for contactless measuring of temperature of textiles or any other non-metallic materials. Range of instrument is from 125 to 480 F. It does not require battery or other power source and is easy to operate. Weight is only 2 lb.

EPIC, Inc., 150 Nassau St., New York 38, N. Y.

Do you want more data? Write ◂ or use card on page 175; list N-109

Big things are happening with HERCULES®

POLYPROPYLENE

olefin fiber

The lightest of all fibers—Hercules polypropylene—is now a commercial reality. More and more technicians and designers are visualizing the benefits of its unique combination of properties in terms of new and improved textile products. Numerous fabrics now under development—woven, nonwoven, tufted and knitted—indicate clearly that you can profit from the qualities of this new man-made fiber. Hercules polypropylene offers: **1.** High tenacity. **2.** Light weight. **3.** More coverage per pound than any other fiber. **4.** High resistance to flexing. **5.** High resistance to abrasion. **6.** High resistance to chemical attack.

This remarkable fiber can create new market opportunities in great variety. With proper development, high-volume uses may include products as different as floor coverings, industrial fabrics, work clothes, coated fabrics, upholstery, and pile fabrics. We are now spinning Hercules polypropylene fiber commercially in three forms: continuous multifilament yarn, staple fiber, and tow...bright and semi-bright lusters in natural and solution spun colors. The detailed physical properties, denier tables, comparative coverage data, and other facts will help you evaluate markets. Ask for them.

Call or write:

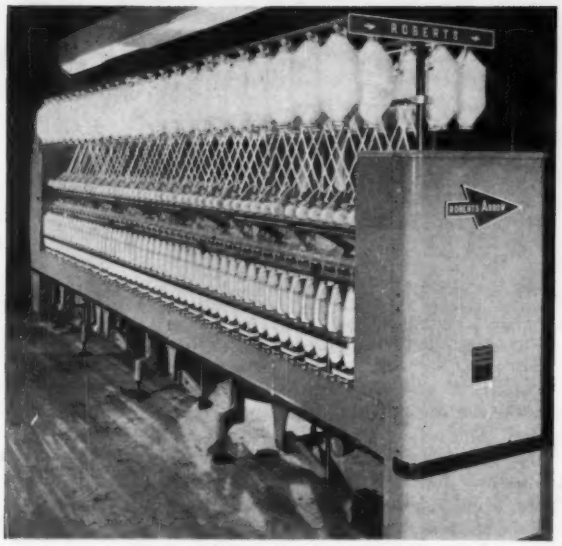
HERCULES POWDER COMPANY

Fiber Development Department
380 Madison Avenue, New York 17, New York
Branch Office: 1214 Wachovia Bank Building, Charlotte, North Carolina

FP61-2

For further information use Handy Return Card, Page 175

More productive, versatile spinning frame



The latest model of the Roberts Arrow spinning frame, which is manufactured for cotton or worsted system spinning on an all-ball-bearing chassis in either a 25" or 36" width, offers spindle speeds up to 15,000 rpm, drafts from 10 through 60, and bigger and heavier packages with more and tighter wound yarn.

The all-ball-bearing undercarriage with steel cross shafts, broached arms, and spring counterbalance provides for cleaner operation and streamlining under the frame and a more consistent pull regardless of the location of the ring rail. A simplified traverse mechanism with fewer parts is attached to the foot end roll stand, thus becoming an integral part of the drafting system for smoother action to the traverse bar and for cleaner operation and appearance. It permits any setting between 0 and 5/8".

The all-ball-bearing head-end and head-end draft gearing arrangement provide for the full range of drafts and twists with only one-fourth the number of change gears formerly needed. Every gear shaft is mounted in widespread ball bearings, and the hardened head gears are all of one pitch, width, bore, and keyway.

Roberts Co., Sanford, N. C.

Do you want more data? Write ◂ or use card on page 175; list N-110

Boosts volume of compressed air; dries it, too

The effective volume of compressed air produced by an existing compressor can be increased from 15% to 35% and drier air can be obtained by using a Coblentz Dry Air System which refrigerates the intake air and eliminates the need for an aftercooler. Some other advantages of the system are the following: (1) water is taken out of the air before it is compressed, preventing formation of oil-water sludge, rust in lines and machines, and water in lines; (2) intake of cold, dense air throughout the year prolongs life of compressor and components and minimizes maintenance; (3) use of com-

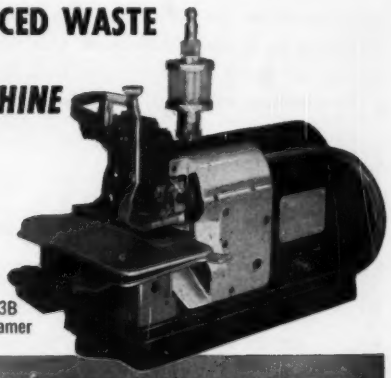
For IMPROVED and SPEEDED processing ... with REDUCED WASTE

MERROW NOW OFFERS ... *IN A SINGLE MACHINE*

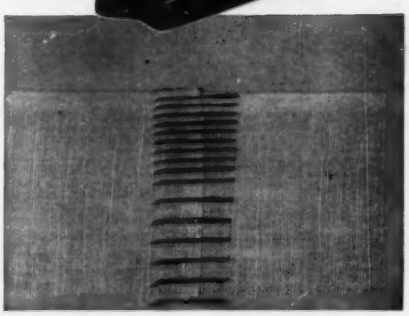
- ***WIDER STITCHING***

plus

- ***MULTIPLE STITCHING AT SELVAGES***



Style 60 Y3B
Butted Seamer



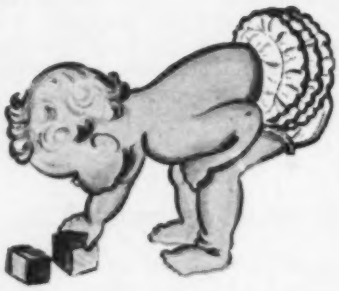
Some processors require a wide butted seam to eliminate "combing out" of coarse material under tension. Others, handling high count materials, need multiple stitching at the selvages for extra strength. Merrow now makes available a machine that fills **both** requirements.

The strong one thread seam (approximately 5/8" wide) is quickly and accurately formed by the high speed machine ... can be easily removed after processing. Result: improved processing ... higher production ... reduced waste.

Request complete information on this or other machines in the Merrow **complete line** of butted seamers.

TRADE MARK REG
The MERROW MACHINE COMPANY
2805 LAUREL ST. • HARTFORD, CONN. • U.S.A.

Moropol 762



non-soil
retentive
durable
non-ionic
resin softener

Moropol 762 increases tear strength and abrasion resistance, and adds to the crease angle in resin treated fabrics. These properties are durable for the life of the fabric.

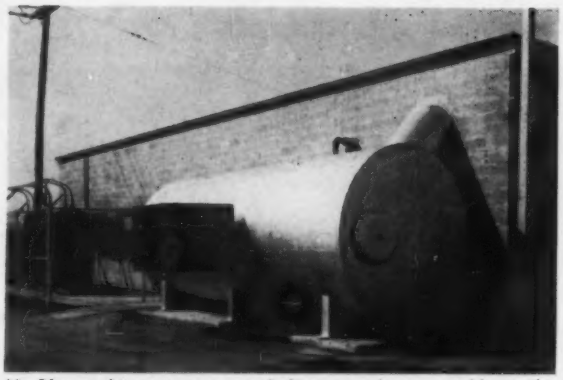
The "hand" imparted by Moropol 762 as a resin softener is silkier than with other durable softeners, and is excellent for fabrics like women's apparel. It does not contribute to the pickup of soil and will not retain soil or dirt during laundering, as do many thermoplastic resin softeners. This feature recommends its use on white goods in preference to acrylate, silicone, and polyethylene softeners.

General Properties

Chemical Nature:	An aqueous non-ionic dispersion of an epoxy type plasticizer.
Appearance:	Creamy white emulsion
Concentration:	40%
pH:	6.0 - 6.5
Compatability:	Compatible with water phase resin solutions as well as cationic, acid, alkaline, and metal salt additives.
Stability:	Freeze-thaw and storage stable for over 6 months.

MORETEX
CHEMICAL PRODUCTS, INC.
314 W. Henry Street Spartanburg, S. C.

Manufacturing Chemists For a Half Century of Textile Progress



Air filter, refrigeration unit, and dry air cooler are visible in this view of a typical Coblentz Dry Air System.

pressed air at the highest temperature possible is permitted.

Outside air is drawn through a standard air filter by an internal fan in a large metal housing. Fan blows air through chilled water coils into the intake of the compressor, introducing it at a temperature of 35 to 40 F. Chilled water is refrigerated by a standard commercial refrigeration unit which can be installed inside the fan housing but must be separated by a panel from the dry air cooler.

Lynch Corp., P. O. Box 271, Anderson, Ind.

Do you want more data? Write ◂ or use card on page 175; list N-111

Efficient yarn dyeing machines

Scholl skein dyeing unit.

Scholl skein and package dyeing machines (high and low pressure) offer the following advantages: easy loading and unloading; sampling and addition of dyestuff during operation; high capacity pumps; ideal flow ratio.

Ernest L. Frankl Associates, Inc., 515 Madison Ave., New York 22, N. Y.

Do you want more data? Write ◂ or use card on page 175; list N-112

How to speed fabric inspection

With the Mark Fix 3 Automatic Fabric Defect Marker an inspector can insert colored threads or tags in the selvage of fabrics from 5 to 15 times faster than by hand. Operated by hand, the precision-made device will mark a defect in four or five seconds; operated with a slide

tray which can be easily countersunk into the examination table, it will complete the operation in two to three seconds.

The machine weighs only 21 ounces and is very easy to operate. Four colors of marking thread are available on quickly replaceable spools which hold enough thread to make about 1000 tags.

Trumeter Co., 38 West 32nd St., New York 1, N. Y.

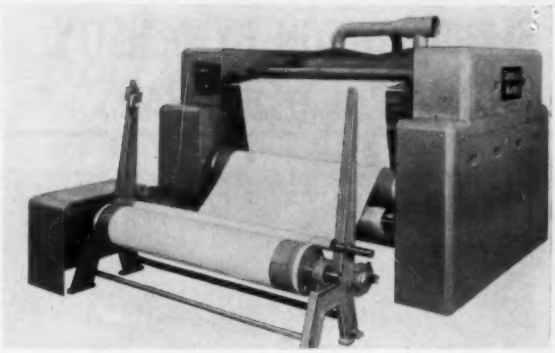
Do you want more data? Write ◂ or use card on page 175; list N-113

Scorch testers offer easy temperature regulation

Two new models of the Atlas Scorch Tester may be easily and quickly set to any desired temperature between 250 and 440 F, as a Thermistor with transistorized electronic temperature control unit is utilized in each to regulate the temperature of the two plates. These new laboratory instruments, the SO-3A with 1⅛" x 4" plates and the SO-5A with 5" x 5" plates, are used for (1) determination of damage to fabrics due to retained chlorine (AATCC method 92), (2) colorfastness to wet or dry hot pressing, (3) transfer of color due to heat and pressure, and (4) changes in physical properties due to pressing at various temperatures. Closely controlled conditions of temperature and pressure insure good reproducibility and repeatability of results.

Atlas Electric Devices Co., 4114 N. Ravenswood Ave., Chicago 13, Ill.

Do you want more data? Write ◂ or use card on page 175; list N-114



Shears 50" print cloth at 10,000 yd/hr

The new Curtis & Marble M-130 Shear operates at speeds up to 190 ypm with four complete sets of cutting parts. Both sides of the goods are sheared in one pass through the machine.

Mill tests on loom rolls of 50" print cloth and broadcloth averaging 180 yd in length show that a large scray capacity is required with sewing time cycle for loom rolls of about 25 sec.

Curtis & Marble Machine Co., 72 Cambridge St., Worcester, Mass.

Do you want more data? Write ◂ or use card on page 175; list N-115

DRONSFIELDS' PATENT
ATLAS BRAND
EMERY FILLET

U.S.A. Patent
2426441

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THE PRINCIPAL MILL SUPPLY HOUSES
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BLEND COTTON BY DENSITY THROUGH WEIGH PANS

NOW AVAILABLE: An economical **conversion** of existing opening hoppers to weighing feeders by the addition of a scale mechanism. To be ranged with the standard sandwiching SYNCROVEYOR (control panel assembly) and plucking cylinder (The SYNCROBLENDER).

OBJECT: To improve process uniformity and efficiency throughout any Blend process by the use of this PRODUCTION INSTRUMENT.

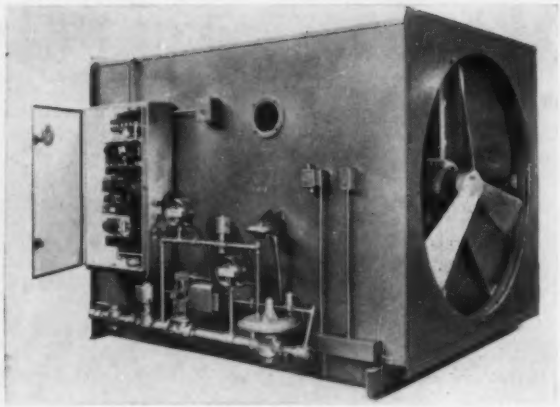
HOW IT IS DONE: Fiber properties can vary widely. Ultimately, the basic yarn evenness requirement is to place the same number of fibers of each density (represented by the laydown) in each inch.

Therefore, consider it "fact" that stock representation per yard of picker lap is from one bale per hopper and select and laydown bales accordingly. Meter consistently predetermined increments of ounces . . of each density (fineness) designation in short term control intervals of seconds. Handle reworkable waste through 1 weigh pan.

No additional floor space, connected horsepower, or labor required for **SYNCROMATIC SYSTEM.**

U. S. Sales Agents:
PARROTT and BALLENTINE, Inc.
3440 Augusta Road, Greenville, S. C.

FIBER CONTROLS CORPORATION
GASTONIA, NORTH CAROLINA



Solves unbalanced ventilation problem

The Type MG make-up air unit—a self-contained, gas-fired device for introducing comfort-tempered air into working areas—eliminates the problems of unbalanced ventilating systems and negative building pressures encountered by industry in winter. Air deliveries range from 22,000 to 70,000 cfm; Btu ratings from 2,125,000 to 5,375,000. "Summer-Winter" controls also enable the units to be used for hot weather breeze cooling.

Propellair Div., Robbins & Myers, Inc., Springfield, Ohio.

Do you want more data? Write ◂ or use card on page 175; list N-116

Speeds skein drying as much as 50%

Yarn in skein form can be economically dried on a new model of the Saco-Lowell/Fleissner Suction Drum Dryer which utilizes the air suction principle for efficiently drying raw stock, knit goods, tow, and top. Use of the machine, which is known as the Hank Yarn Dryer, can result in production increases up to 50%, compared to conventional types of dryers, depending upon skein weight and type of fiber being processed. Also, with the skein dryer it is possible to continuously wet process and dry skeins because of the suction drum processing bowl operated in conjunction with the unit.

On a four-drum dryer with a 32" working width, production averages 1,000 lb/hr when processing wool skeins made on 36" reels with a moisture content of 70% before drying and 16% afterwards.

Skeins are hand-placed on an intake apron before the

Operating principle of the Saco-Lowell/Fleissner Dryer is illustrated by this interior view. The wet skein is held to the bottom of the drum by air suction. Skein is released when it has been dried sufficiently.

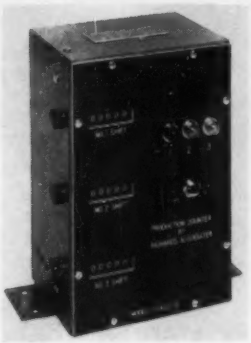
For further information use Handy Return Card, Page 175

dryer and are delivered from the last drum to a delivery apron. They can be removed from the delivery apron and bundled or they can be delivered directly to a box or truck.

Saco-Lowell Shops, Textile Machinery Div., P. O. Drawer 2327, Greenville, S. C.

Do you want more data? Write ◂ or use card on page 175; list N-117

Records machine running time



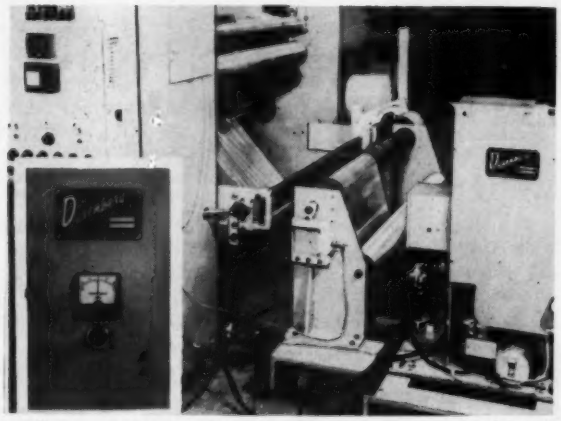
The R-400-3 Electric Counter registers in minutes and tenths the operating time of textile processing machines such as cards, spinning frames, winders, and looms. Of rugged design and dust-tight, the counter operates on 110-volt, 60-cycle, a-c current.

Also available from this manufacturer are systems which provide daily card records of the efficiency of each machine. A record of all machine stops, length of each stop, and the reason for the stop can be provided if desired.

Richards & Associates, Newton 58, Mass.

Do you want more data? Write ◂ or use card on page 175; list N-118

Versatile automatic web tension controller



Installation of the Auto-Tensioneer on the company's Model 800 slitter-rewinder. Inset photo shows control box with tension indicator.

The Auto-Tensioneer, which automatically provides continuous control of tension in fabrics during processing, features simplicity and versatility. There is only one tension setting to make, and an indicator on the control box shows the web tension at all times.

Web tension as measured by the sensing roll is relayed through a pair of load cells to automatic controls. These in turn operate a servo-valve which adjusts the brake up or down with pneumatic pressure to give the exact web tension wanted.

John Dusenbery Co., Inc., Clifton, N. J.

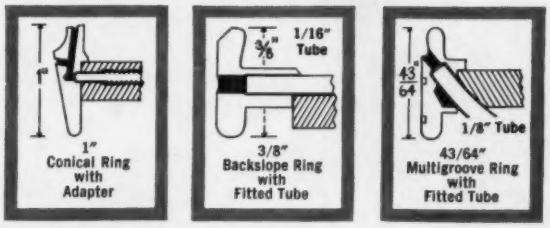
Do you want more data? Write ◂ or use card on page 175; list N-119

Specialized Rings

FOR AUTOMATIC PRESSURE LUBRICATION

ALEMITE®

LINCOLN®



From the introduction of the Alemite and Lincoln systems, our rings have been in step with every development. For any pressure lube application you are considering, DIAMOND FINISH either has a ring already successfully operating, or can adapt one based on experience with a wide range of machinery.

—and here's our exclusive "DUALUBE"*

"Dualube" is our exclusive design to assure controlled adequate delivery of lubricant around the ring, whether light oil or heavy grease is used. Available in Conical and Vertical styles, from 43/64" up. Fits all systems.

Literature Available

*Patent Pending

WHITINSVILLE (MASS.) SPINNING RING CO.

Makers of Spinning and Twister Rings since 1873

DIAMOND FINISH

Rep. for the Carolinas & Va.: H. L. WILLIAMS, 2825 Spring Valley Rd., Charlotte, N.C.

Rep. for Ala., Ga., & Tenn.: C. E. "CHAD" DAVIS, East Lake Shore Drive, Dalton, Ga.

WE DON'T MAKE ALL THE APRONS

But We Make The Best

- Custom Made
- Precision gauged
- Bark or Chrome Tanned Leather
- Absolute Uniformity

TEXTILE APRON CO., East Point, Ga.

HUGH WILLIAMS & COMPANY, TORONTO, CANADA—CANADIAN REPRESENTATIVE

Plastic bag sealer soon pays for itself

Plastic bags containing knitted outerwear and underwear, hosiery, and other textile products, may be quickly and economically sealed in the "Seal-A-Bag Automatic" heat sealer which takes up about as much space as a filing cabinet and operates on 110-volt a-c current. Adaptable for sealing bags from 1" to 14" wide and up to 18" long, this machine reduces the number of product handlings in the bagging/sealing process, as it can be fed directly from semi-automatic bagging machines, from an external conveyor, or by hand-loading operators.

American Engineering & Design Corp., New London, Conn.

Do you want more data? Write ◂ or use card on page 175; list N-120

Belting for hazardous atmospheres

Power transmission belting which permanently retains its ability to dissipate static electricity as it is generated is available for use in potentially hazardous locations such as in the presence of combustible or explosive fumes or gases and combustible dusts. Designated as "Non-el-Stat" belting, it has the conductive layer bonded into the belt itself.

Extremultus, Inc., 130 Coolidge Ave., Englewood, N. J.

Do you want more data? Write ◂ or use card on page 175; list N-121

Custom-designed rayon yarns

A new method of combining continuous filament rayon yarns is being used to create distinctive and exclusive yarn types for home furnishings and dress fabrics. The process, called Cuprel, produces textured, lustrous yarns in a variety of color effects, with full hand and exceptionally good cover. Two-tone, irridescent effects and random slubbing accentuated by intense color are among the many Cuprel-type yarns available.

By means of the process, any American Bemberg filament rayon yarn, novelty or plain, can be intimately combined with any other filament yarn without twisting. By varying yarn types and colors of the basic yarns to be combined for the Cuprel type, different textures, weights, color effects, and patterns are achieved.

American Bemberg, 261 Fifth Ave., New York 16, N. Y.

Do you want more data? Write ◂ or use card on page 175; list N-122

For further information use Handy Return Card, Page 175

Struck oil

No, let's not get carried away. You won't necessarily hit the jackpot simply because you use Du Pont fibers. But we do claim that these are the best-known, most trusted and preferred man-made fibers in the world, bar none. And Du Pont keeps building this preference through a strong advertising program, including network TV, magazines, newspapers, radio... Fibers are just one factor in your operation. An important factor, though. You've a far better chance for far better business when you feature Du Pont fibers on your labels, in your advertising and in your selling plans.

GET A SELLING EDGE WITH DU PONT NYLON "ORLON"* ACRYLIC FIBER "DACRON" POLYESTER FIBER**

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY DU PONT

Enjoy the "DU PONT SHOW OF THE WEEK", Sunday nights, NBC-TV. *Du Pont's registered trademark for its acrylic fiber **Du Pont's registered trademark for its polyester fiber

FREE BOOKLETS

12-1 512 RING TWISTER—Brochure describes economical ring twister which gives larger packages of better quality at lower cost. Leesona Corporation, Providence 4, Rhode Island.

12-2 YARN MILL MODERNIZATION—Reprint tells how modernization of yarn mill equipment can pay big dividends. Davis & Furber Machine Company, North Andover, Massachusetts.

12-3 CLIPPER MACHINE-LACING—Bulletin No. 157 gives detailed product information and case history examples of Clipper machine-lacing benefits. Clipper Belt Lacer Company, 980 Front Avenue, NW, Grand Rapids 2, Michigan.

12-4 STROBOTAC—Complete information on "Strobotac" which shows clearly operational details of various textile machines. General Radio Company, West Concord, Massachusetts.

12-5 HYDROSULFITES—Folder gives complete details on hydrosulfites and sulfoxylates. Nopco Chemical Company, 60 Park Place, Newark, New Jersey.

12-6 THERMOSETTING RESIN—Technical bulletin and sample of economical thermosetting resin now available. Proctor Chemical Company, Salisbury, North Carolina.

12-7 STEAM-DETERGENT GUN—Complete details on mill-wide cleaning by jet-blast with "Hurriclean" steam-detergent gun. Oakite Products, Inc., 42 Rector Street, New York 6, New York.

12-8 CHEMICAL GRADE "999" SALT—Information on how Morton Chemical Grade "999" Salt makes for truer colors and fewer seconds. Morton Salt Company, Industrial Division, Dept. TI-12, 110 N. Wacker Drive, Chicago 6, Illinois.

12-9 CONTINUOUS BLEACHING—Booklet details all of Du Pont's continuous bleaching processes. Available only in U.S. and Canada. Du Pont Electrochemicals Dept., Peroxygen Products Div., Wilmington 98, Delaware.

12-10 BALLOON CONTROL RING—Complete information and samples available on time- and cost-saver in twisting and spinning operations. Mitchell-Bissell Company, Trenton, New Jersey.

12-11 WIDER, MULTIPLE STITCHING — "Butted Seams" brochure describes how a single machine offers wider stitching plus multiple stitching at selvages. Merrow Machine Company, 2805 Laurel St., Hartford, Connecticut.

12-12 SWEDISH SPRING STEELS—Spring Steel Catalog describes blue tempered, annealed Spring Steels for precision textile parts. Uddeholm Company of America, 155 East 44th Street, New York 17, New York.

12-13 INDUSTRIAL RECORDING SYSTEM—Bulletin SU-144 describes the use of Tachographs, precision recording devices that can be used anywhere for control of speed, time, and measurement. Wagner Electric Corporation, 6477 Plymouth Avenue, St. Louis 33, Missouri.

12-14 POLYETHYLENE EMULSIONS—Brochure covers the use of polyethylene emulsions in textile finishing operations, including description of physical properties and performance data. Bulletin No. F-108, Eastman Chemical Products, Kingsport, Tenn.

12-15 OVERHEAD MATERIALS HANDLING—Revised booklet No. 2008-R covers engineering and application data for overhead tramrail or monorail type materials handling equipment. Cleveland Tramrail Division, Cleveland Crane & Engineering Co., Wickliffe, Ohio.

12-16 CARD COILER—Bulletin describes ball bearing card coiler, including photographs and detailed drawing. Gossett Machine Works, Gastonia, North Carolina.

12-17 SYNCRO-RANGE DRIVES—Bulletin 112 describes Synchro-Range Select-A-Spede Drives, consisting of an adjustable frequency power supply which runs a number of Synchro-Spede motors in synchronism. Louis Allis Company, 437 East Stewart, Milwaukee 1, Wisconsin.

12-18 ANTI-STATIC LUBRICANTS—Technical bulletin describes Emerstat 7450 (high fiber to fiber lubrication) and Emerstat 7451 (featuring fiber to fiber cohesiveness). Emery Industries, Dept. 5, Carew Tower, Cincinnati 2, Ohio.

12-19 BULK STARCH HANDLING—Brochure describes how bulk shuttle service enables starch trailer to supply 7 mills and lop 22¢ a lb off bag price. Fuller Company, Catasauqua, Pennsylvania.

12-20 BUILDING INSULATION—Catalog describes the use of FOAMGLAS cellular glass insulation and FOAMGLAS-board in the building field. Pittsburgh Corning Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania.

12-21 BULK STARCH AUTOMATION—Booklet outlines plan to help manufacturers convert their operations from bag handling to bulk handling of starch. Penick & Ford Ltd., 750 Third Avenue, New York 17, New York.

12-22 AUTOMATIC COMPRESSION STRAPPING—Booklet describes simple, high productivity textile unitizing equipment for high volume strapping. Acme Steel Company, 135th & Perry Avenue, Chicago 27, Illinois.

12-23 BEARINGS AND SPECIALTIES—Brochure shows all the lines of bearings and bearing specialties available from Dixie Bearings. Dixie Bearings, Inc., 276 Memorial Drive, S.W., Atlanta 3, Ga.

12-24 BOILER FEEDWATER TREATMENT—Booklet answers such questions as "How pure must feedwater be?", "How does operating pressure influence boiler water composition requirements?", etc. Nalco Chemical Company, 6216 West 66th Place, Chicago 38, Illinois.

12-25—CHAIN LUBRICATION—Eight pages of information data make this manual an essential reference for all chain lubrication problems. Oil-Rite Corporation, 2388 Waldo Boulevard, Manitowoc, Wisconsin.

BOOKLETS

raw stock to roving

T-101 LUMMUS PEPPER - SHAKER OPENER. Gives complete details and photographs. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-102 STATIC ELIMINATION. How to eliminate static safely and inexpensively. Simco Co., 920 Walnut St., Lansdale, Pa.

T-105 VERSA - MATIC DRAWING FRAME. Describes drafting elements, quality of sliver, roving and yarn possible. Saco-Lowell Shops, Textile Machinery Div., Easley, S. C.

T-106 SARGENT OPENER. Describes opener with rotary evener and stripper. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-107 FEATHERTOUCH DRAFTING. How to get "highest production per frame at lowest cost." Ideal Industries, Inc., Bessemer City, N. C.

T-112 ADVANTAGES OF ALDRICH PICKERS. Good technical text, comprehensive pictures. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-113 NEW CONDENSER TAPE. Describes Supr-O-Tape, an impregnated fabric condenser tape. Benjamin Booth Co., Allegheny Ave. & Janney St., Phiadelphia 34, Pa.

T-119 FIBER METER. Automatic weighing and blending assures quality, holds variation to 1%. James Hunter, Inc., P. O. Box 298, Mauldin, S. C.

T-120 PIN DRAFTERS. Textile job report No. 21 tells how Warner & Swasey Pin Drafters help modify jute systems for carpet yarns. Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

T-121 UNIVERSAL CARD COILER. Literature describes both head and base swivel for adjustment. Includes data on 90-day free trial. McDonough Power Equipment, Inc., McDonough, Ga.

T-122 RECONDITION OPENING & CLEANING. Bulletin gives whys and wherefores of reconditioning your opening and cleaning lines. Special attention given to each machine with suggestions as to parts replacement. Saco-Lowell Shops, Replacement Parts Div., Box 327, Greenville, S. C.

T-123 COILER CONVERSIONS. Full facts on low initial cost conversion to larger coiler cans. Lists advantages, has complete description. Southern States Equipment Corp., Hampton, Ga.

T-124 CARD DRIVE. Bulletin 301-a describes simple, safe, efficient individual card drive. Southern States Equipment Corp., Hampton, Ga.

T-132 PROCTOR SUPER PICKER. Data sheet gives details of the Proctor Super Picker for use on slabs of baled cotton, or wool and synthetic blends in layers up to 12" thick. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

yarn and warp making

T-201 PRODUCTS FOR SPINNING AND WEAVING. Complete line, applications, advantages shown. Dayco Corp., Textile Div., Dayton, Ohio.

T-202 NEW BOBBIN MANUAL. Complete bobbin guide. Lestershire Spool Division, National Vulcanized Fibre Co., Wilmington 99, Delaware.

T-203 SPINDLE OIL. "Gulfspin" insures against excessive wear and eliminates spindle wobble. Gulf Oil Corp., Gulf Bldg., Houston, Texas.

T-205 HIGH SPEED AUTOMATIC QUILLER. Lists advantages and dimensions of "Autocopser." Terrell Machine Co., Inc., P. O. Box 928, Charlotte, N. C.

T-208 PACKAGED SPINNER MODERNIZATION. Details on Collecto-Vac, Open-Aire Creels, Cross-Jet Cleaner, Air Conditioning Bahnson Company, Winston-Salem, N. C.

T-209 SECTIONAL WARPER. Describes full width and sectional warpers for knitting, weaving. Robert Reiner, Inc., Weehawken, New Jersey.

T-210 CONICAL RINGS AND FLYERS. Complete details and specifications. Herr Manufacturing Co., Inc., 318 Franklin St., Buffalo 2, New York.

T-211 PRECISE WINDING MACHINE. For winding pineapple or straight cones and tubes of synthetics. Foster Machine Co., Westfield, Mass.

T-212 AUTOMATIC CLEANING EQUIPMENT. Working details and advantages of the Tri-Rail Cleaner. American MonoRail Co., 111 East 200th St., Cleveland 17, Ohio.

T-216 SPINNING FRAME CONVERSIONS. Big-package, new frame results at half the cost. Meadows Mfg. Co., P. O. Box 10876, Station A, Atlanta, Ga.

T-217 COLLECTO-VAC. New development collects line, fly and broken ends. The Bahnson Company, Winston-Salem, N. C.

AMERICA'S GREAT MILLS ADOPT THE COMETSA SPINDLE ...AND SAVE 20% TO 30%

Produced by Spain's most progressive spindle manufacturer . . . high precision roller bearing spindles as well as sealed ball bearing spindles with a 5-year lubrication cycle . . . both spindles run true to 15,000 RPM. Interchangeable bolsters—may be removed from frame without affecting the plumb. Made for natural and synthetic fibers. Factory guaranteed—8 to 10 week delivery.

Roller and ball bearing WARP, FILLING, and TWISTER Spindles to meet your special requirements.

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CANADA Rep. Being Named Contact Main Office

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BOOKLETS

wet processing

T-219 **SPINNING AND TWISTER RINGS.** Complete details, pictures, price list. Whitinsville Spinning Ring Co., Whitinsville, Mass.

T-223 **FACTS ABOUT YOUR FLYERS AND SPINDLES.** Advantages of smooth flyer and spindle operation. Ideal Machine Shops, Bessemer City, N. C.

T-500 **WEBB GUIDE SYSTEMS.** Folio No. EG-84 describes webb guide systems for cloth applications. G.P.E. Controls, Inc., 240 E. Ontario St., Chicago, 11, Ill.

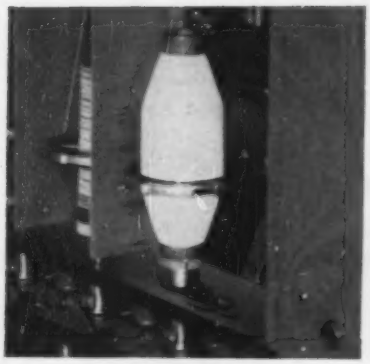
T-502 **FINISHING MACHINERY.** Text and photographs of complete line of machinery. Marshall and Williams Corp., 46 Baker St., Providence, R. I.

T-503 **WATER ANALYSIS.** Includes tables, conversion factors, indicators, standard solutions. Solvay Process Div. Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

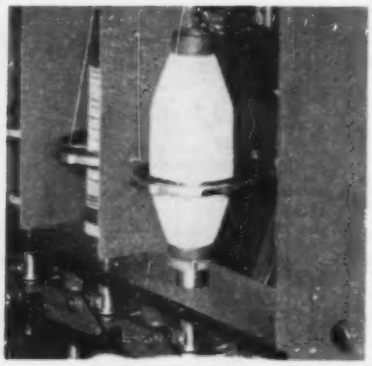
T-504 **UREA FORMALDEHYDE.** Literature on urea formaldehyde or U.F. concentrate-85. Dept. CUFI-29-1. Nitrogen Div., Allied Chemical Corp., 40 Rector St., New York 6, New York.

White NON-FLUID OIL

TRADE MARK REGISTERED



Ordinary Oils or Greases spatter



White NON-FLUID OIL stays on Rings

If your output per frame is not up to expectations, chances are you are using the wrong lubricant.

White NON-FLUID OIL is the preferred lubricant in the textile industry because it does not cause black yarn or spread out on rails to spatter bobbins. It adheres to wearing surfaces and stays on rings, lubricating effectively to keep travelers running almost friction-free. This reduces the pull at high speeds, resulting in fewer broken ends and a yarn of more uniform quality. White NON-FLUID OIL is more economical than ordinary oils and greases . . . you need less lubricant and have fewer applications.

Send today for a free testing sample of white NON-FLUID OIL and Bulletin T-16. You will see the difference.

NEW YORK & NEW JERSEY LUBRICANT CO.

1898 65 YEARS 1961 — SIXTY-FIVE YEARS OF LUBRICATION TO INDUSTRY — NEW YORK OIL

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NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.

T-506 **CATIONIC SURFACE ACTIVE AGENT.** Describes Uversoft "D." Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-508 **PEROXIDE BLEACHING SYSTEM.** Illustrates and describes this continuous system. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.

T-510 **TEXTILE CHEMICALS.** Describes leading products for wet processors. Royce Chemical Co., Carlton Hill, N. J.

T-512 **DEPUMA.** Describes odorless viscous, non-evaporating emulsion for anti-foam. Koppers Co., Inc., Chemicals & Dyestuffs Div., Porter Bldg., Pittsburgh 19, Pa.

T-513 **CATALYST AC-6.** Tells how curing efficiency may be stepped up as much as 25%. Monsanto Chemical Co., Plastic Division, Springfield 2, Mass.

T-514 **SODA ASH BULLETIN.** Contains useful data covering this subject. Solvay Sales Division Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-516 **ALUMINUM CHELATE PEA-1.** Technical data sheet tells how aluminum Chelate PEA-1 may be used with advantage in many applications where aluminum in proplate is unsatisfactory. Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-517 **CHEMICAL CATALOG.** Lists products with chemical composition, properties and applications. Antara Chemicals Div., General Aniline & Film Corp., 435 Hudson St., New York 14, New York.

T-519 **HYDRAULIC POWER UNITS.** Describes unit for operating hydraulic textile machines. B. F. Perkins & Son, Inc., Holyoke, Mass.

T-522 **CUT WATER TREATMENT COSTS.** Describes the control of scale, slime, algae and corrosion. Oakite Products, Inc., 126C Rector St., New York 6, New York.

T-526 **PRODUCTS FOR TEXTILE IMPROVEMENT.** Describes products and services designed to provide better fabrics. B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

T-527 **SODIUM HYDROSULFITE.** Literature and test samples are available on "T-C Hydro." Tennessee Corp., 617-629 Grant Bldg., Atlanta, Ga.

T-528 **ETHANOLAMINES.** Lists application, chemical and physical properties. Nitrogen Division, Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-531 **ROTARY DYEING MACHINE.** For use in dyeing hosiery, hats, gloves, socks, etc. Turbo Machine Co., Lansdale, Pa.

T-534 **DYEING AND FINISHING MACHINERY.** Complete line presented in series of catalogs. Birch Brothers, Inc., 32 Kent St., Somerville 43, Mass.

T-535 **DYEING, BLEACHING AND DRYING EQUIPMENT.** Complete line for cotton, wool and synthetics described. Color pictures. Morton Machine Works, 1718 3rd Ave., Columbus, Ga.

T-536 **NAPHTHOL RATIOS SLIDE CHART.** Quickly and accurately enables operators to determine Naphthol Ratios. Alliance Color & Chemical Co., 33 Ave. P, Newark 5, New Jersey.

T-540 **PENFORD FINISHING GUMS.** Complete data, including physical properties. Penick & Ford Ltd., Inc., 750 Third Ave., New York 17, New York.

T-541 **REGENERATION OF ZEOLITE WATER SOFTENERS.** Explains advantages of Lixate Process. International Salt Co., Scranton, Pennsylvania.

T-542 **DYEING SYNTHETIC FIBERS.** Detailed analysis of methods and materials. General Dyestuff Co., 435 Hudson St., New York 14, New York.

BOOKLETS

T-543 INDUSTRIAL BRUSHES. Features use on shears, printing machines. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-544 WASTE HEAT RECOVERY. Describes system of waste heat recovery from polluted water. Ludell Mfg. Company, 5200 West State Street, Milwaukee, Wis.

T-545 WASHERS FOR SCOURING, BLEACHING, ACIDIFYING. Describes high capacity, continuous process washers. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-546 NAPHTHOL FOR LIGHTFAST BROWNS. Booklet describes new, straight, non-substantive naphthol. Naphthol As-BN, for the continuous naphtholation of cotton and rayon piece goods in the dyeing of economical, fast-to-light browns. General Dyestuff Co., 435 Hudson St., New York 14, New York.

T-547 SOFTENER LUBRICANT, NAPPING AID. Technical information available on softener, lubricant and napping aid for natural and synthetic fibers, yarns and fabrics. Nopco Chemical Co., Harrison, N. J.

T-556 HUNTER DYEING EQUIPMENT. Describes fully with diagrams Hunter Model A Dye Becks Hunter No/Lap Reels, Model S Dye Kettles. Open Width Dye Kettles. Sample Dye Kettles. James Hunter Machine Co. North Adams, Mass.

T-557 HIGH ACTIVITY CATALYST. Technical bulletin describes new catalyst AC-6 which provides increased activity, excellent bath life, minimum odor formation, etc. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

T-558 CATIONIC DYE LEVELER. Bulletin TX-34 gives new information on dye leveler for acid colors on nylon tricot and wool through use of Nopco 1425-B. Nopco Chemical Co., Textile Chemicals Div., Harrison, N. J.

T-561 PUMP POURABLE PASTES. Bulletin tells how Moyno pumps can pump any textile liquid that can be forced through a pipe, even if highly viscous or corrosive. Robbins & Myers, Inc., Springfield, Ohio.

T-563 POLYETHYLENE FINISHING AGENT. Booklet contains information needed to adopt Emulsifiable A-C polyethylene as a finishing agent to any particular process. Semet-Solvay Petrochemical Div., Allied Chemical Corp., 5th Floor T, Rector Street, New York 6, N. Y.

T-564 HYDROGEN PEROXIDE BLEACHING. Booklet discusses advantages, operating details and savings in chemical costs of Activated Hydrogen Peroxide Bleaching Process for Cotton Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-566 ETHYLEX GUMS. Brochure describes properties of hydroxy ethyl ether derivatives of corn starch. Applications of these noncongealing gums in warp sizing and finishing covered. A. E. Staley Mfg. Co., Box 151, Decatur, Ill.

T-572 DYEING MACHINERY FOR EVERY PURPOSE. Illustrated literature available on complete line of automatically controlled machinery. Gaston County Dyeing Machine Co., Stanley, N. C.

T-576 YARN PREPARATION. Describes products for yarn preparation, printing, finishing. Polymer Industries, Springdale, Conn.

T-577 STAINLESS DRY CANS. Information on stainless steel, 75 psi, reverse dished, head dry cans. Can be furnished Teflon-coated if desired. Sims Metal Works, West Point, Ga.

T-579 AUTOMATIC GUIDING EQUIPMENT. Catalog shows various types of automatic guiding equipment for accurate cloth guiding. Fife Mfg. Co., Inc., P. O. Box 9815, Oklahoma City, Okla.

T-580 AIR SLASHER DRYER. Shows construction and operating details. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

T-581 BUTT-TACKING SEWING MACHINE. Describes operation, installation of single thread butt-tacking sewing machine. The Merrow Machine Co., 28 Laurel St., Hartford, Conn.

fibers and yarns

T-601 FORTISAN-36, NEW TEXTILE FIBER. Includes charts, diagrams, text, presents technical properties. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte, N. C.

T-602 CAPROLAN NYLON HEAVY YARNS. Describes strength, long flex life and ready dyeability. Fiber Sales Dept., National Aniline Div., 261 Madison Ave., New York 16, N. Y.

T-605 COLOR-FAST FIBERS, Further information on "Coloray," Courtauld's solution dyed rayon staple which is a contribution to color fastness in fabrics. Courtaulds (Alabama) Inc., 600 Fifth Ave., New York 20, N. Y.

T-608 TASLAN TEXTURED YARNS. Technical information on dyeing and finishing of new fabrics made with Taslan. E. I. du Pont de Nemours & Co., Wilmington 98, Delaware.

T-609 PROCESSING NYLON STAPLE. Data sheet describes method of processing Du Pont 42 Nylon Staple in blends with cotton. Covers complete op-

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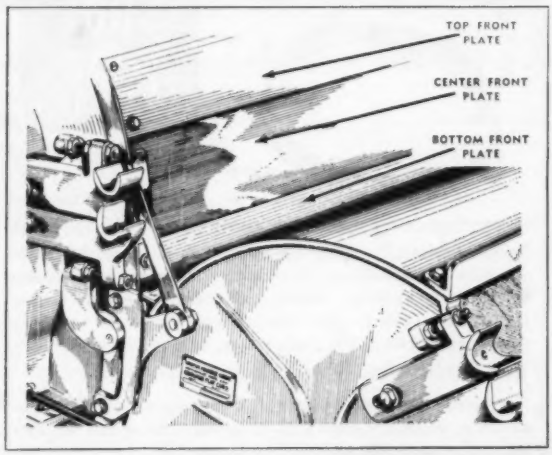

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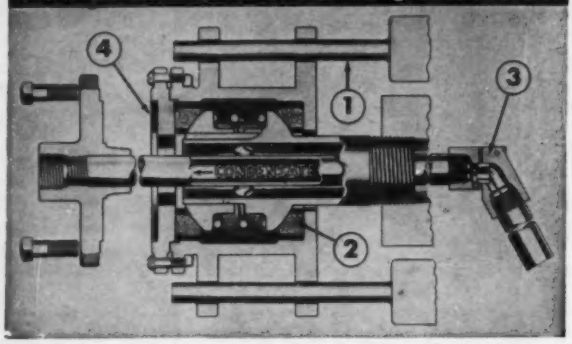

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For faster break-ins, higher spindle speeds, and longer service, Kluttz Lubri-Cased Rings have no equals. Write for samples and prices today.

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Representatives: Thomas H. Watson, Malden, N. C.; Wm K. Shirley, Newnan, Ga.; L. D. Talley, Mexia, Texas.
For New England & Canada: Textile Parts, Taunton, Mass.

KLUTTZ RINGS, Inc.
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For further information use Handy Return Card, Page 175

TI'S INFORMATION CENTER

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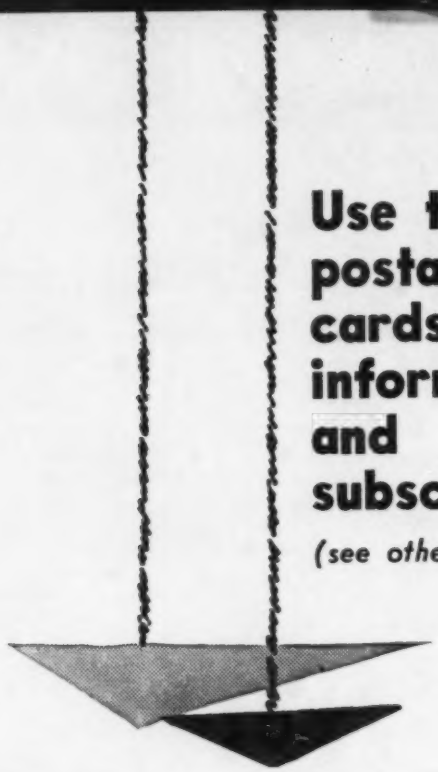

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BOOKLETS

eration through sizing. Bulletin N-93, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

laboratory

T-701 **TESTING INSTRUMENTS.** Descriptions of 37 instruments for testing textiles. Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J.

T-703 **SHADOGRAPH WEIGHING DEVICES.** Pictures and information on various types of scales. Exact Weight Scale Co., Columbus 8, Ohio.

T-705 **STROBOTAC.** Measures speed of rotating, reciprocating or other cyclic motions. General Radio Co., West Concord, Mass.

T-706 **YARN COUNT SCALE.** Data sheet tells show direct-reading instrument provides fast, accurate method of determining yarn number. Exact Weight Scale Co., Columbus 8, Ohio.

services for management

T-801 **FACTORING SERVICE.** Details on advantages of factoring, including information on general banking and pension plans. Trust Company of Georgia, Atlanta, Ga.

T-805 **PROFIT THROUGH FACTORING.** Brochure gives facts on the use of factoring as a modern plan for developing sound business growth and added profits. Walter E. Heller & Co., Dept. TI-2, 105 W. Adams St., Chicago 99, Ill.

T-808 **FACTORING.** Complete details on services offered as mill factors. L. F. Dommerich, 271 Madison Ave., New York, N. Y.

T-810 **THE WONALANCET WAY** is the title of an editorial booklet published five times a year dealing with current cotton problems. Write Wonalancet Company, 128 Burke St., Nashua, N. H.

T-812 **BEECHCRAFTS FOR 1961.** Booklet available from Southern Airways Company shows how Beechcraft executive airplanes can save executives time and money. Write Southern Airways Co., P. O. Box 718, Atlanta, Ga.

T-819 **ORGANIZED LUBRICATION PAYS.** Planning book entitled "Management Practices that Control Costs via Organized Lubrication" shows how to effect savings in five areas of plant operation. Available from Texaco, Inc., 135 E. 42nd St., New York 17, N. Y.

plant operation

T-902 **BELT LACING EQUIPMENT.** Includes prices, specifications, etc. Clipper Belt Lacer Co., Grand Rapids, Michigan.

T-903 **"MOTOR SELECTOR."** How to select a-c motors for specific application. Bulletin B-2103. Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio.

T-904 **GEARMOTORS, MOTORGEARS, AND FLUID DRIVES.** Catalog supplies complete information on double, triple, and quadruple reduction gearmotors and motorgears. Electrofluid and fluid drives are also explained. Link-Belt Company, Dept. PR, Prudential Plaza Chicago 1, Illinois.

T-907 **WRAP UP LINT PROBLEMS.** Automatic lint filter removes lint from air, winds it into disposable roll. Bulletin 234, American Air Filter Co., 275 Central Ave., Louisville 8, Ky.

T-908 **TEXTILE MOTORS.** Bulletin scribes complete line of textile motors. Diehl Mfg. Co., Finderne Plant, Somerville, N. J.

T-909 **COMPRESSORS.** WB two-stage water-cooled. Space-saving units require modest foundation up to 125 psi and 1150 cfm displacement. Bulletin WB-10. Gardner-Denver Company, Quincy, Illinois.

T-910 **MODERN LUBRICATION METHODS.** A report to management tells how modern lubrication methods can help save thousands of dollars in three major economic areas of textile plant management. Describes twelve operating advantages of automatic lubrication systems. Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

T-912 **STORY OF NYLON BRISTLE.** Tells of discovery and production, with special attention to "Tynex," a form of nylon ideal for use in brushes. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-913 **"ONE-SHOT" LUBRICATORS.** Bulletin describes wide field of application for one-shot lubricators on machines requiring closely controlled but infrequent oil feed. Bijur Lubricating Corporation, Rochelle Park, N. J.

T-914 **INDUSTRIAL GREASES.** Describes multi-purpose lithium soap industrial greases. Sinclair Refining Co., 600 Fifth Ave., New York, New York.

T-917 **BLOWERS AND EXHAUSTERS** Full description, including detailed drawings. Buffalo Forge Co., 490 Broadway, Buffalo 5, N. Y.

T-918 **PAINT STRIPPING BOOKLET.** Explains simplified method of stripping paint. Oakite Products, Inc., 22 Thames St., New York 6, New York.

T-921 **CATALOG OF NEEDLE BEARINGS.** Design, application for five types of needle bearings. The Torrington Co., Torrington, Conn.

The Man from "Minnesota"

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Paint peeling on the walls of slasher, vat or dye rooms?... Are floors marred and discolored? . . . whatever your specific "problem" area the industrial specialist from Minnesota can provide the solution for its cure.

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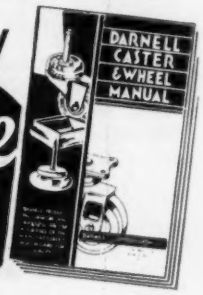

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PERSONAL NOTES

(from page 40)

Corp. **Carl Brande** and **Roy Lawson** have been appointed supervisors of the second and third shift respectively.

Jackson E. Spears, former vice-president of Burlington Industries, Inc., has been appointed to the U. S. Department of Commerce as a technical consultant to the department for textile matters.

OBITUARIES

Albert Johnson, 51, assistant manager of the Lanett (Ala.) Mill division of West Point Mfg. Co.

Max Auerbach, 61, vice-president of Luxite Mills, Inc., Hazleton, Pa.

Gladding B. Coit, 66, president of General Latex & Chemical Corp., Cambridge, Mass.

Dwight M. Davidson, Jr., 47, president of Engineered Plastics, Inc., Gibsonville, N. C.

C. LeRoy Hoffman, 63, assistant traffic manager of the Georgia-Alabama Textile Traffic Association, Atlanta, Ga.

Charles A. Horton, 87, retired president of Hope Webbing Co., Pawtucket, R. I.

Louis Maiss, 51, owner of Rivoli Knitting Mills, Yonkers, N. Y.

Albert Paul March, 59, formerly eastern sales agent for the Gaston County Dyeing Machine Co., Stanley, N. C.

Murray J. Maurer, general manager of the knit dye division of Sunbury Textiles, Inc., Sunbury, Pa.

George P. McClenaghan, 63, vice-president in charge of the cotton division of J. P. Stevens & Co., Inc., Greenville, S. C.

James E. Millis, 77, chairman of the board of Adams-Millis Corp., High Point, N. C.

George Royle, Jr., 79, retired founder of George Royle & Co., Philadelphia, Pa.

Jerome F. Ryan, 56, former president of Covered Rubber Thread Corp., Needham, Mass.

Thomas P. Townsend, 54, former local manager of Watts Mill and assistant secretary of J. P. Stevens & Co., Inc.

Augustus K. Underkoffler, 70, founder of Jacques De Loux, Inc., Sellersville, Pa.

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MECHO AIR GUIDER

This ingenious device, readily applied to machines making textiles and plastics, is infinitely adjustable to weaves and weights, and controls fabric alignment to prevent spoilage, eliminate wrinkles, reduce damage and loss, cut handling costs, minimize machinery down-time and repairs.

Protect the quality of your product, your own reputation and prestige with this money-saver that produces "Miles of Cloth without a Wrinkle".

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SUPPLIER NOTES

Jack E. Dalton has been appointed special representative to the textile industry for the electronic data processing division of **Minneapolis-Honeywell Regulator Co.** Mr. Dalton will be headquartered at Greensboro, N. C.

Appointed district managers for two newly-established sales offices for **Pittsburgh Plate Glass Company's** chemical division are H. Richard Sherburne at Los Angeles, Calif., and Arthur W. Wilson at Portland, Ore. Also, Donald A. Huff has been named to succeed O. W. Andrews at San Francisco, Calif., as district sales manager.

Union Carbide Chemicals Co. has announced that it has purchased from **General Tire and Rubber Co.** rights under the Price patent with the right to grant sublicenses to its customers. The Price patent relates to urethane products made from polyethers.

F. A. Young Machine Co., Inc. has announced the receipt of a contract from U. S. Rubber Co. for 13 specially designed twister frames for the Dixon plant in Gastonia, N. C. The firm will modernize 42 spinning frames for the LaFar Mills' Bowling Green (S. C.) plant, and will install NYAF high-draft spinning change-overs in the Bama Cotton Mills, Enterprise, Ala.

Arthur H. Siegel has joined the **Spunize Company of America, Inc.,** as director of licensing for the worldwide promotion and sales of the company's patented process for making textured yarns.

Frank H. Coker, who for the past eight and one-half years has been responsible for the sales development of "Taslan" textured yarns for **E. I. du Pont de Nemours & Co., Inc.,** has retired. * * * Lester S. Sinness has been named general manager and Russell C. Weigel has been appointed assistant general manager of the textile fibers department. Andrew E.

For further information use Handy Return Card, Page 175

Mr. Sarti
Crown Chemical

Mr. Jones
Du Pont

Mr. Selbee
Diamond Crystal

Mr. Barr
Standard Mill Supply

Mr. Crawley
Hercules

Mr. Floyd
Industrial Lab.

Buchanan, Jr., formerly general manager of the department, has retired.

Twenty-one **International Business Machine Co.** sales representatives recently completed a three-week course in textile management at the Clemson (S. C.) College School of Textiles. Richard C. Warren, IBM eastern regional manager, described the course as "an opportunity to provide our textile industry specialists with training that will enable them to apply a completely professional approach to the data processing needs of textile companies."

The color and chemicals division of **Interchemical Corp.** has announced that its southern headquarters are now located in modern quarters at 1300 Arrowood Blvd., Charlotte, N. C.

George W. Sarti has been named vice-president in charge of the southern operation of **Crown Chemical Corp.** Mr. Sarti is located in the Greenville, S. C., office.

R. W. Pickles has been appointed as the greater New York City and upper state New York representative for the **Fife Manufacturing Co.** Mr. Pickles will maintain an office at Basking Ridge, N. J.

William P. Crawley has been named a sales representative in the fiber development department of **Hercules Powder Co.** Mr. Crawley will be working out of the Charlotte, N. C., office.

Container Corp. of America is constructing a 350,000 sq ft folding carton plant at Carol Stream, Ill.

William B. Floyd has resigned from Uster Corp. to form the **Industrial Laboratory Equipment Co.** of Charlotte, N. C. The firm will represent manufacturers of laboratory equipment.

Walter Imboden has been named chief engineer of **Textile Machine Works.** In this post, Mr. Imboden will have charge of the engineering department and development laboratories.

Angus Macdonald, vice-president in charge of marketing of **Courtaulds (Ala.), Inc.,** has retired.

James A. Selbee has been appointed regional manager of **Diamond Crystal Salt Co.** The region covers North Carolina, South Carolina, and Virginia.

Ralph W. Jones, Jr., has been named marketing manager for rugs and carpets in the fibers department of **E. I. du Pont de Nemours & Co., Inc.**

L. C. Wall, divisional sales manager, has been named to assist J. K. Taylor, assistant director of sales for **Sonoco Products Co.**

Robert D. Barr, Jr., has been elected president of **Standard Mill Supply Co.,** Pawtucket, R. I.

At the annual meeting of the Philadelphia chapter of the Quartermaster Association held recently, the **American Textile Machinery Association** was among the top ten industries to receive certificates of merit from

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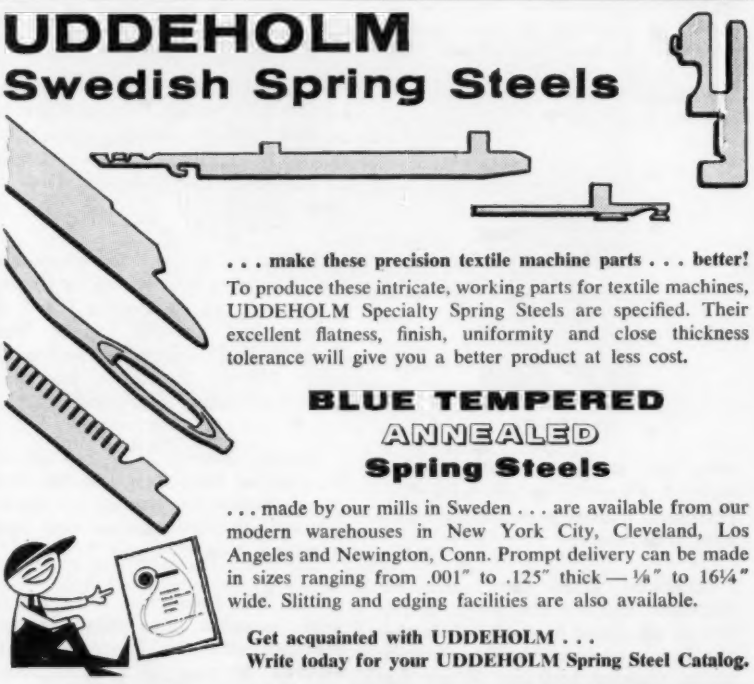
Swedish Spring Steels



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SUPPLIER NOTES

(from page 179)

the National Quartermaster Association for their outstanding support to the continuing mission of the Quartermaster Corps.

The Adams/Zeller Corp. has begun construction of a new plant at Ivyland, Pa. The facility, located on a six and one-half acre tract, will have 15,000 sq ft of manufacturing space, and 3,000 sq ft for offices and engineering.

Draper Corp. has signed an agreement with **Page Belting Co.** to sell the Page Check Control as part of Draper's original equipment. Draper will offer the check control as optional equipment on new looms in the U. S. and Canada and will have exclusive rights on Draper looms in the export market.

J. Ralph Stump has been appointed business representative in the Carolina-Virginia area for **William Iselin & Co., Inc.** Mr. Stump will be headquartered in Hickory, N. C.

Thread guides for the textile industry are being fabricated under high-speed production conditions by use of an injection molding process developed by **American Lava Corp.**

William O. McMillan has been appointed vice-president in charge of

Mr. McMillan

sales for **Scott & Williams, Inc.** Beale J. Faucette, former sales vice-president, has been named full-time sales consultant.

American Enka Corp. has reorganized the merchandising activities on a division basis. S. W. Holmes has been appointed rayon merchandising director and Jay Kaner has been named nylon merchandising director.

J. Ebert Butterworth, president and chairman of the board of **H. W. Butterworth & Sons Co.**, has retired after 45 years of service in textile machinery manufacturing. Mr. Butterworth will continue as a consultant to the firm, and serve as a member of the board of directors. • • • Eric B. Norman has been appointed general sales manager.

Mr. Butterworth
H. W. Butterworth

Mr. Norman

Mr. Simpson
Consos, Inc.

Mr. Burgner
Osco Chemical

Avondale Mills, Sylacauga, Ala., has placed an order for 44 Saco-Lowell Rovematic roving frames, **Saco-Lowell Shops** announced recently. Twenty-eight frames of 96-spindle capacity will be installed in the Catherine plant and sixteen of the 72-spindle units will be installed in the Eva Jane plant. The frames now in use will be transferred to the Birmingham facility, where they will be used in the production of carded and combed yarn.

A new laboratory devoted to pioneering new uses for polymers in plastics was recently opened in Clark, N. J., by Celanese Polymer Co., a division of **Celanese Corp. of America.**

Crosrol Carding Developments, Inc., has been established in Greenville, S. C., at 18 Beattie Place, to market the Crosrol Cotton Web Purifier and related textile equipment. Harvey H. Clinch has been elected executive vice-president.

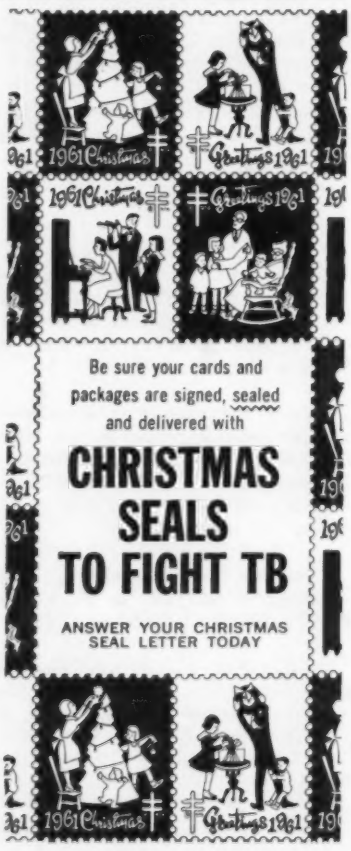
Everett Burgner, Jr., has joined the staff of **Osco Chemical Co., Inc.**, as representative serving the textile industry in Chattanooga and surrounding area.

John R. Poer has been named sales manager of a newly-created chemical sales department of **J. P. Stevens & Co., Inc.**, with headquarters in Greensboro, N. C.

Garland S. Simpson, Jr., has been appointed sales representative for **Consos, Inc.** Mr. Simpson will cover the state of South Carolina.

Trumeter Co. has announced that Robert R. Simpson of Wycoff, N. J., now represents the firm in New Jersey, Pennsylvania, New York, Delaware, and Maryland. • • • Bornand & Leuthold of Geneva, Switzerland, has appointed Trumeter exclusive sales agent in the U. S. for its automatic fabric defect marking machine.

Southern Machinery Co. has announced their new address as P. O. Box 600, Brushy Creek Road, Greer, S. C.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Practical Dyeing of Orlon and Orlon-Wool Blends

(Continuation of the report "Dyeing the Synthetics Up-to-Date" from page 119)

by J. S. Thackrah
Organic Chemicals Department

THE MOST RECENT trend in dyeing Orlon for the knitwear trade has been the shift from skein to package dyeing, to reduce dyeing time and labor costs. Yarns can be prebulked and dyed, they can be dyed directly on springs, by the Du Pont sponge core package method, or in muff form.

Investigations of package dyeing revealed the following:

1. Standard cationic dyes transfer very well at 220 F. Since cationic retarders actually inhibit transfer, they should be greatly reduced in quantity or eliminated in package dyeing.

2. Though the yarn after muff or package dyeing is flat and coarse rather than fluffy and soft, it is much improved by application of softener and by using a stress bulking process. Stress bulking involves drawing of the yarn over double knife edges mounted on coners. The tension applied to the yarn thus breaks the set produced when the yarn is compacted on the packages during bulking and dyeing.

3. After dyeing, stress bulking, and knitting, the usual steaming of garments increases bulk even more. These treatments closely approximate a skein-dyed fabric.

Orlon/Wool Combinations. The safest procedure for dyeing Orlon and wool blends is the two-bath, two-step system. But it is time-consuming. The ideal method utilizes one bath and a one-step procedure.

For light to medium shades this can be accomplished by the Alkanol TD method:

Scour:
1.0% Alkanol HCS
0.5-1.0% TSPP
Dyeing:
Set fresh bath at 120 F; add
2.0% Alkanol TD
1.0% acetic acid 56% (pH 4.5-5.0)
5.0-10% Glauber's salt
Run 5 min
Add dyes for wool
Raise to 170 F at 2°/min
Add dyes for Orlon
Raise to boil at 1°/min
Boil 1½ hr; sample

Dye selection is important when Alkanol TD (a mixture of anionic and nonionic agents) is used. The older cationic dyes, such as Victoria Green and Fuchsine, can precipitate in combination with some Sevrons. Formulas should be laboratory-tested before use.

These are the advantages of the Alkanol TD method:

1. Anionic retarders do not occupy dye sites, making over-dyeing for reasons of style changes or rehandling much easier.

2. Alkanol TD acts as a leveling agent for the wool dyes; however, it does not retard them, as do cationic retarders.

3. Staining of Orlon by neutral dyeing acid dyes is minimized. Cross staining advantages are particularly important for cross dyes when using a one-bath, one-step system.

4. Staining of wool by cationic dyes is minimized.

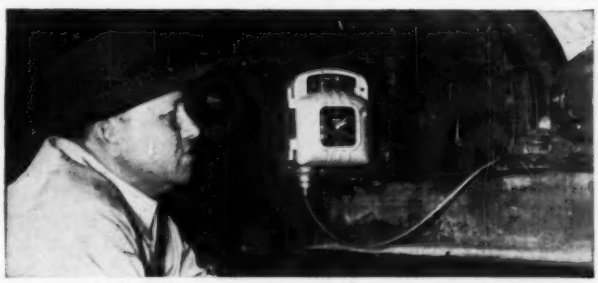
5. Shade duplication is reportedly excellent.

6. Savings in time.

For dyeing heavy shades, cationic retarding by the Alkanol LN method is recommended:

Scour:
1.0% Alkanol HCS
0.5% TSPP
Dyeing:
Set bath at 120 F; add
2.0% Alkanol LN
1.0% acetic acid 56% (pH 4.5-5.0)
5.0-10% Glauber's salt
Run 5 min
Add dyes for wool
Raise to 160-170 F at 2°/min
Add dyes for Orlon
Raise to boil at 1°/min
Boil 1½ hr; sample

Alkanol LN is a mixture of non-



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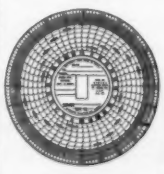

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ionic and cationic agents. It complexes the wool dyes being used, preventing precipitation when cationic dyes are added. It has only limited retarding action and so is preferred primarily for dark shades. It does not limit the dyes for the wool component to those that will exhaust from a complexed state onto the wool fiber. There are, however, a sufficient number to make a full shade range.

Reduction in crack marks and softness of fabric hand are among advantages of this method.

High road

(from page 139)

thus assuring exact shade matching in the finished garment.

The normal piece dyeing cycle for the Creslan double knit fabrics is about 6 hours, including scouring. Dyestuff selection is made from acid, disperse, or basic dyestuffs, dependent on depth of shade and fastness properties.

In the final operation of the simple processing routine, the fabric is rinsed and then dried on a tensionless dryer, and finally passed through a tensionless calender where it is also inspected. Cuts of all production lots are then sent to Cyanamid's laboratory for testing, particularly for shrinkage and light and wash fastness. Under the program, Mr. Berman pointed out, it is only after the fabrics have been tested and approved that the Creslan name can be used with the end-use fabric or garment.

The mill's current consumption of Creslan has reached 10,000 lb per week; Mr. Berman expects an increase to 100,000 lb per week within two years, as new markets develop.

Meeting the challenges of new markets has become "old hat" for Fair-Tex. It has the plant, the machinery, and the personnel to produce knitwear for all age groups for virtually every occasion of wear. The mill is so equipped that it can shift with ease from the coarsest type of bulky knit fabric to the finest type jersey dress goods. What is more, the plant is willing to experiment with new fibers and yarns on machines of latest design, as its record proves.

New at Manchester

(from page 149)

proaches to bobbin stripping have been tried, but it now looks as though an Italian firm has largely solved it. They have at last found a method of removing synthetic-fiber waste yarn, in particular, from bobbins without any damage being possible to the bobbin or spool itself.

The system is simplicity itself. *M. Scaglia S.P.A.*, of Milan, removes the yarn by means of a jet of hot air which simply blasts it away from the metal tube or bobbin. Fiber flanges or those of synthetic resin are not damaged by the treatment. The operation of this unusual machine is simple. The unit comprises a jet of hot air, the temperature of which can be varied to meet the requirements of the yarn being stripped. Yarns that can be blasted in this way include acetate, viscose, polyamide, polyester, acrylic, etc. All the operative does is traverse the bobbin immediately beneath the air jet, which cuts through the yarn. The yarn is then dropped directly into a waste bin.

This brief report summarizes some of the more outstanding exhibits at a vast event, and it would be impossible to cover everything.

Prominent American visitor to the show, John B. Rubenstein, executive vice-president of Security Mills Inc., Newton, Mass., summed up things when he said: "It is perhaps unfortunate that this show has followed so closely upon Atlantic City, as many manufacturers have already placed orders there, but those buyers who have come over, have come prepared to buy if they see anything particularly interesting." The fact that they did see important and interesting things was amply evidenced by the full order books of many leading machine builders.

Probably Lew Colton, British agent for the Italian firm of *Billi*, summed things up pretty well when he hung up a sign:

"Sold out . . . Gone fishing!"

For further information use Handy Return Card, Page 175

MAKE IT A HABIT!

Management and operating executives of textile manufacturing plants should make it a habit to read the Executive Section in each monthly issue of "Textile Industries." It contains

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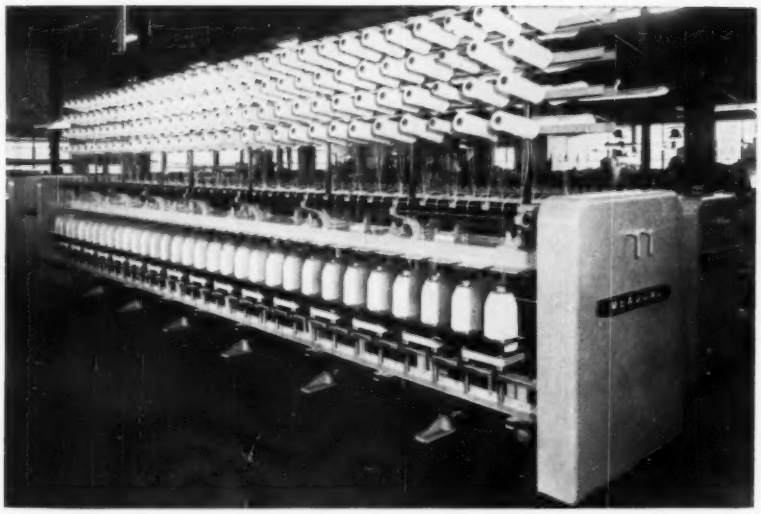

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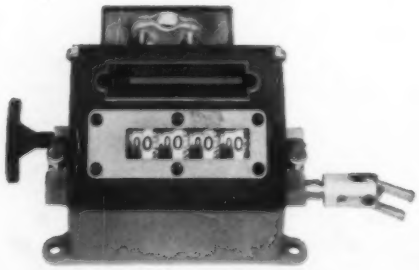

Easy to reset, this predetermining counter acts to make or break a circuit, turn on a light or stop the machine after a desired run. Also features finger-tip reset and rugged construction.